Innovations

Impact of Group Lending on Enterprise Capital Formation and Employment Creation in Salale Oromia, Ethiopia

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Abstract: *The Ethiopian government has been promoting MSE using different strategies, such as access to credit in a group. Although the government is working on a group loan program, the MSE's performance is ineffective. Therefore, the objective of this study was to examine how group lending affected the formation of enterprise capital and the creation of jobs in Salale, Ethiopia. Primary data was collected through questionnaires and key informant interviews. The effects of group lending on the income of enterprises and the creation of jobs were determined using the PSM estimation. A simple two-stage random sampling technique was used to draw the sample. Data collected from 388 respondents were analyzedusing aneconometric model. The estimation of the prosperity score was done using the probit model. The study concluded that group lending has a significant impact on enterprise income, but not on employment creation. Finally, to recognize the role that MSEs play in capital formation, the study recommends that the government and financial institutions should formulate strategies through context- and practice-based impactful training, business development advisory services, guidance, and financial support.*

Keywords: *Group Lending; Enterprise; PSM; Salale; Ethiopia*

1. Introduction

Background of Study

The literature shows that the promotion of MSEs is one of the policy strategies to reduce poverty and achieve national development goals that increase employment creation and income generation (Raymond, 2009). Poverty is a major challenge in developing countries, and MSEs are the key strategy to reducing poverty, as they would lead to the creation of jobs and the generation of income (Esther, 2013). The

definition of MSEand itscriteria to categorizeenterprises as small, medium, and large vary from country to country and even from time to time (Lukács, 2005). Therefore, many countries used the number of employees as the dominant criterion to define MSE (Rosemary, 2009).In this study, the definition of Ethiopia's MSE Development Strategy (2011) has been used. According to this strategy, in Ethiopia, MSEs are business enterprises that can employ up to 5 individuals with a capital of Birr 50,000 for the service sector and Birr 100,000 for the industry sector; while small enterprises are those business enterprises that can employ 6 to 30 individuals with a capital of Birr 50,001 to 500,000 for the service sector and Birr 100,001 to 1,500,000 for the industry sector.

One of the sustainable ways of reducing poverty in developing countries is the establishment of micro- and small enterprisesthat cancreate jobs for unemployed people and entrepreneurs(UNIDO, 2003). However, the key challengesare to rely on limited resources andfinancial sources. Enterprises start a business either using their capital or taking a loan, or by combining both, orinitially starting a business with their capital and seeking credit to expand their business.Microfinance institutions are taken as a mechanism to provide financial services toa group of MSEs or individuals. This group formation is used for two purposes: first, it reduces the risk of a repayment problem, since members of the group will take responsibility for repayment jointly; second, it solves the problem of lack of collateral (Esther, 2013). Microfinance is a form of financial development thatestablished based on social collateral rather than physical collateral andhas focused mainly on alleviating poverty through providing financial services,which also includes insurance, transactional services, and savings to low-incomepeople and microenterprises those lacking access to banks(Barr,2005; CIDA,2012; Schreiner, 2001;Ledgerwood,1999; Otero, 1999).

There are strategies through which these MSEs get access to credit from microfinance institutions. Where capital is scarce, individuals come together and pool their small capital and start their own self-employment business, and they can also apply for a group lending mechanism.MFIs use group lending to solve the problem of repayment. Group lending came into practice through Credit cooperatives, first introduced in Germany during the 1850s. It was later introduced into microfinance in the 1980s by the Grameen Bank in Bangladesh(WB, 2008).Both German credit cooperatives and Grameen Bank illustrate the basic joint-liability framework. Borrowers self-select into groups in which all members are liable for all other members' loans. All borrowers accept the threat that if their group does not fully repay its loans, then all members are cut off from future credit from this lender.

Recognizing the role of MSEs in the creation ofemployment and capital formation, especially for young people, the Ethiopian government released its first Micro and Small Enterprise Development Strategy in 1997 and demonstrated its commitment to creating an enabling environment for and the promotion ofMSEs. The other MSE development strategy was developed in 2011 and prioritizes MSEs that can contribute to import substitution strategies (EDRI, 2014).Ethiopia's 2003 Industrial Development Strategy was aimed at giving MSEs access to loans and a variety of government support. In Gross Transformation PlanI, the development ofMSEs was one of the growth pillars of the country; similarly,in Gross Transformation Plan II, emphasis has been given to nurturing the flourishing of MSEs(ibid).

Access to MSEaccess to credit is assumed to improve its performance and create jobs. To meet the credit needs of MSEs and improve their financial access, various micro-financialorganizations in Ethiopia areundertaking several initiatives, and the governmentfacilitates group lending to overcome collateral problems.Although MSEs play a significant role in shaping economic growth, theyfaceseveral problems,andtheir effectiveness through group lendingis not well-known in the study area. Therefore, conducting this study is needed to examine the impact of group lending on MSEs' income generation and employment creation.

Justification of the study

Group lending is growing in Ethiopia,particularly in the study area,as a flexible means of expanding access to financial services to encourage the micro and small enterprise sectors. This group lending allows the financial institution to generate high repayment rates from enterprises without requiring collateral.Despite the government and MFI efforts, MSEs are facing problems in the group lending program, and most of them have not been successfully transformed into large-scale investments. In addition, even though the purpose of loans is to support the establishment of new businesses, some portions of the credit has been used for household consumption rather than business investment. Even if MSEs are consideredthe main provider of jobs and income in the study area, they have facedchallenges and are ineffective through a group lending program (North Shewa Zone MSE Office, 2018). Thus, since several problems such as weak government monitoring and support on performance of MSEs, credit access and amount constraints, and lack of modern business knowledge and skillhave been observed, ineffectiveness of group lending on the performance of MSEs is a big problem in the study area.

Some studies such as Banerjee et al. (2013); Crepon et al. (2011);Dumo (2015);Akinloye and Jonathan (2015); Ngugi and Kerongo (2015) andTraci and John (2012) argued that group lending has a positive and significant impact on the Micro

and Small Enterprises performance. However, other studies showno impact of group lending on Micro and Small Enterprises' performance.So far, nosimilar empirical studies have been conducted using econometric analysis in the study area. Hence, as the research gap,the effectiveness of group lending and its impact on enterprise income and employment generation are inclusive and unknown in Salale.

Therefore, it is necessary to conduct this study, which aims to examine the impact of group lending on enterprise capital and employment in Salale, Oromia, Ethiopia.

Objectives of the study:

- Examine the impact of credit on the capital formation of enterprises.
- Examine the impact of credit on the creation of jobs in the enterprise.
- Examine factors that determine enterprise credit utilization

2. Literaturereview

The literature on MSEs shows that the promotion of MSEs is one of the policy strategies to achieve national development goals such as poverty alleviation and economic growth (Raymond, 2009). In many countries of the world, particularly those in Africa and Asia, the microenterprise sector constitutes the majority of the working population (MUDC, 2013). The criteria and ways to categorize companies as small, medium, and large also vary from country to country and even from organization to organization. However, according to Lukács (2005), size criteria and economic criteria are ways of defining MSEs in most countries. Ethiopia also uses these criteria for the definition of MSE operating within the country's territory (Garoma, 2012). Although the statistical criteria used to define enterprises vary, the size criteria commonly include the number of employees (the most widely used), the size of the assets, the volume of deposits, sales volume, and insurance enforcement. The economic definition covers the influence of the market share of the MSE product or service at the national level and personalized management (Lukács, 2005).Many countries commonly used the number of employees as the dominant criterion to define micro and small enterprises because of the comparative ease of collecting information, and here again there is variation in defining the upper and lower size limits of micro and small enterprises (Rosemary, 2009).). Therefore, in this survey, the definition of the Federal Democratic Republic of Ethiopia, MSEDS (2011) has been applied.

MSE in Ethiopia has made a significant contribution to overall development and efforts to reduce the unemployment rate. Currently, micro- and small enterprises benefit millions of unemployed youths in Ethiopia (Martha, 2012). Micro and small enterprises provide income and employment to significant proportions of workers in rural and urban areas by producing basic goods and services for rapidly growing

populations. It plays an important role in the Ethiopian economy, contributing more than 99% of all companies, more than 60% of private sector employment and approximately 30% of exports (Mulatand Tadele, 2006).

Credit cooperatives were first introduced in Germany during the 1850s. By World War I, there were about 19,000 such cooperatives, and together they had issued some 8% of all German banking liabilities. The German credit cooperatives had parallels and imitators in several European countries in the 19th century and, in some sense, are forerunners of lending schemes that rely on joint liability. Rural cooperatives tended to make long-term loans, often for 10 years or more and financed those loans from local deposits.Most loans were secured by a cosigner.The cosigner did not have to be a member of the cooperative but was held responsible for any loan the borrower did not repay.

The second example is the most famous group loan organization today, Bangladesh's Grameen Bank.The Grameen Bank has been replicated in several other countries, so the impact of this form of lending goes far beyond Bangladesh. In Bangladesh, the bank lends to about two million people, most of whom are rural women without homes. The Bank operates in 36,000 villages, or about half of all villages in the country. Grameen Bank borrowers organize themselves into self-selected groups of five people, men and women, in different groups, as dictated by social norms in Bangladesh. All members of the group must be from the same village. After the formation of the group, the members receive training from bank employees and begin weekly meetings. From the beginning, each member makes small weekly savings deposits. Several weeks after the group is formed, two members receive a loan. If the initial borrowers make their required weekly payments, and if the group otherwise adheres to the rules of Grameen Bank, two or more members receive loans, and so on.Loans are small and must be paid in weekly installments for 1 year.If any member of a group defaults, all members are ineligible for Grameen Bank credit in the future (Khandker et al.,1995).

Both credit cooperatives and Grameen Bank illustrate the basic joint-liability framework. Borrowers self-select into groups in which all members are liable for all other members' loans. All borrowers accept the threat that if their group does not fully repay its loans, then all members are cut off from future credit from this lender. Underlying the entire group concept is the idea that these individuals, due to shared location and other ties, know a lot about each other, can observe each other's day-to-day business activities and the results of those activities, and have ways to pressure each other to repay loans (Maitreesh Ghatak, 1999).

There are strategies through which these MSEs havehave access to credit from microfinance institutions. MFIs use group lending to solve the problem of

repayment. Group lending came into practice in the nineteenth century through German cooperatives. It was later introduced into the microfinance movement in the 1980s by Grameen Bank in Bangladesh (WB, 2008). Joint liability, also known as group liability, refers to the terms of the actual credit contract, whereby individuals are both borrowers and simultaneously guarantors of other clients' loans in the same credit group (Armendariz de Aghion and Morduch 2005).

Group lending and social capital are two central elements of many microfinance solutions operating around the world. However, the effectiveness of group lending in reducing transaction costs and lending risks for microfinance institutions (MFIs) is mediated by institutional environments. Group microlending has been used successfully in some parts of the world to expand the reach of microcredit programs (Diego AB, 2015).

Group lending is a common practice in many microfinance programs in developing countries. Given that the poor often lack adequate financial collateral, group lending programs are intended to provide a feasible way of extending credit to poor people who are usually kept out of traditional banking systems. Group lending allows lending institutions to rely on information advantages among group members, rather than financial collateral, to mitigate information asymmetry between lenders and borrowers. There is a debate, however, regarding whether these programs can achieve and maintain sound repayment performance while simultaneously serving poor borrowers (Armendariz de Aghion and Morduch, 2005). A major obstacle to joint liability as a lending mechanism arises when social ties among possible borrowers are too weak to support feelings of group solidarity. This is a significant problem in efforts to transplant Grameen-style arrangements to wealthier countries. Mondal (Maitreesh Ghatak, 1999).

Empirical studies on the impact of group lending indicated different findings. Traci and John (2012) found that credit-constrained firms were significantly more likely to go out of business than non-constrained firms. Babajide (2012) found strong evidence to suggest that micro- and small-business growth is not facilitated by access to microfinance. Atandi and Wabwoba (2013) found that the effect of credit available to MSEs, considering an additional number of employees, was found to be that MSEs do not necessarily lead to good performance. Banerjee et al. (2013)indicated thatmicrocredit group-based lending did not affect average monthly expenditure per capita. Banerjee et al.(2010), evaluating a group lending microcredit, had positive effects on business creation and the purchase of business durables, but no effect on consumption or any human development outcomes. According to Crepon et al. (2011), the primary outcome of credit availability was an increase in the size of households' current self-employment ventures. Dumo (2015)

conducted a study to examine the impact of group-based lending on the welfare of borrowers. The study found that among explanatory variables, the amount of credit and the current income level of the household are positively and significantly correlated.Akinloye and Jonathan (2015) concluded that inNigeria there existed a correlation between the performance of small-scale firms and microfinance loans. Ngugi and Kerongo (2015) showed that microfinance has a positive impact on MSE growth. Most of the business owners indicated that microfinance had helped them grow their business and accumulate assets.

3. Research Methodology

Research Design and Approach

In this study,a quasi-experimental research design was used to identify a comparison group that islike the treatment group in terms of baseline data characteristics (preintervention).; whereasa mixed research approach was usedwith more emphasis on the quantitative approach as the leading approach. The systematic empirical investigation of quantitative data and their relationships can be subjected to rigorous quantitative analysis.

Population and Sampling Techniques

The sample of this study was drawn from the total population; 14786 MSEs exist in Salale (North Shewa Zone), Oromia regional state, Ethiopia. A two-stageSimple Random Sampling Technique was applied to draw the sample unit from a target population. In the first stage, six woredas were purposively selectedbased on the intensive working ofMSEs, and in the second stage, 400 MSEs were randomly selected proportionately for towns and sectors.The selected woredas from which the enterprises were selected include Kuyu, Fiche, Dara, Alaltuu, Warra Jaarsoo, Yaayyaa Gulallee, and Wucale.

Figure 1 Map of the Study Area

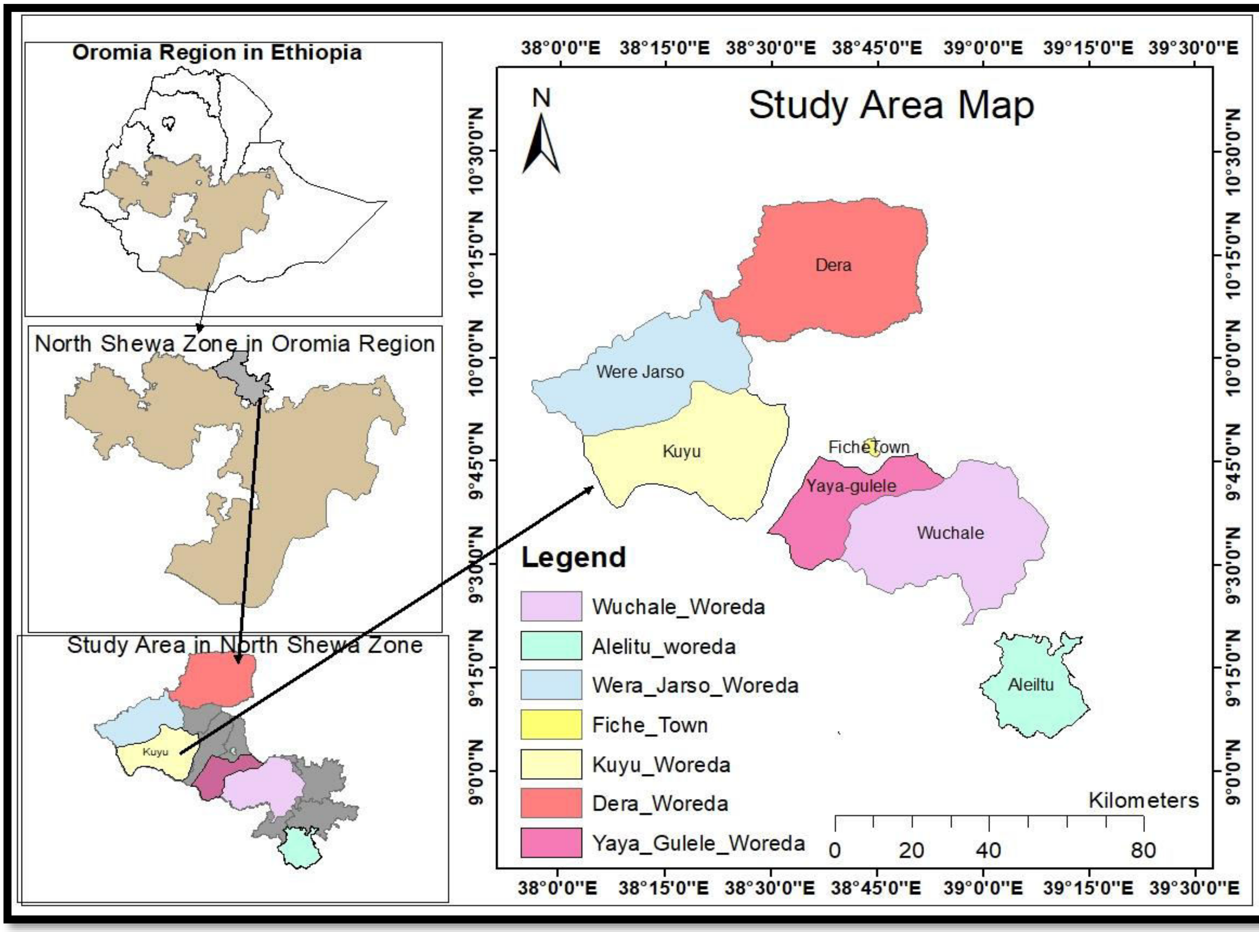


Figure 1 shows that the map of the study areas or woredas which include Yaya gulele woreda, Kuyu Woreda, Wara Jarso Woreda, Aleltu Woreda, Dera Woreda,Wuchale Woreda, and Fiche Town from where data were collected.

Consequently, using the sample size determination formula, a 400 MSE sample was drawn for the questionnaire. Data were collected with MSE heads sampled.

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

Where n= sample size; N= number of population (enterprises); e is the level of confidence.

$$n = \frac{14786}{1 + 14786(0.05^2)} = 400$$

Data Types and Sources

In this study, both primary data (cross-sectional) and secondary data were used in the analysis.Primary data were collectedfrom the enterprises categorized into the comparison group and enterprises categorized under the treatment group that took

credit jointly; and data were also collected fromexperienced experts, government officers, and micro-financial institution leaders. Qualitativedatawere usedin the study to collect an in-depth understanding and information through open-ended questionnaires and interviews.

Methods of Data Collection

A structured questionnaire was used to collect primary data. The key informant interview was also used to collect qualitative data from experienced experts, government officers,and OCSSCleadersto obtain qualitative information on the effectiveness of the group loanprogram. Secondary data was collected by reviewing official reports from MSEsand MFIs.

Informed Consent statement:

You are invited to take part in a study titled ‘‘Impact of Group Lending on Enterprise Capital Formation and Employment Creation in Salale, Oromia, Ethiopia," led by Principal Investigator Belay Kasaye from Salale University. The study aims to examine the effect of group lending on the development of enterprise capital and job creation in the Salale area. If you are willing to participate, you will be required to complete a survey, which will take about 10 minutes. Participation is completely voluntary, allowing you to skip questions or withdraw at any time without any consequences. Your answers will remain private and anonymous, as no identifiable data is gathered or associated with your survey responses, and your response is recorded by written form and securely documented. While there are no known risks associated with this study, your involvement could provide valuable insights. If you have any questions about the study, please reach out to Belay Kasaye on the phone number: +2510222. For inquiries regarding participant rights, you can contact the Salale University Research Ethics Committee at +251938494848.

Method of Data Analysis

In this study, both the econometric data analysis method and the descriptive data analysis method were used to analyze the data.

Econometric Method of Data Analysis

To gauge how credit affects the relevant variables, this study used the treatment approach with and without treatment. This approach best suits credit-user and noncredit-user comparison by using the PSM method. The probit model was used to estimate the propensity score. In this model, the regressor and variable are the credit user that takes the value one if the enterprise is taking creditand thevalue zero otherwise. Independent variables were the factors that influence credit use, and outcome variables. After obtaining propensity score values conditional on observable covariates from binary estimation, a matching was performed based on a matching algorithm that was selected based on the required criteria. Then the

impact of credit on outcome variables (capital accumulation, employment generation) is specified as follows.

$\tau_i = Y_i(D_i = 1) - Y_i(D_i = 0)$ ..... (6)

Where τ_i is the effect of the treatment (effect due to credit usage), Y_i is the outcome of the enterprise i, D_i is whether or not an enterpriseis a credit user (i.e., if an enterprise is a credit user $D_i = 1$, if not $D_i = 0$). However, one should note that $Y_i(D_i = 1)$ and $Y_i(D_i = 0)$The same enterprise cannot be observedat the same time. Depending on the position of the enterprise in the treatment (credit usage) either $Y_i(D_i = 1)$ or $Y_i(D_i = 0)$is an unobserved outcome (called a counterfactual outcome). Due to this fact,estimating the effect of the individual treatment effect τ_i is not possible and one has to change to estimate the average treatment effects of the population instead of the individual.Two treatment effects are estimated most frequently in empirical studies. The first is the (population) average treatment effect (ATE), which is simply the difference between the expected outcomes of credit and noncredit users.

$\Delta Y_{ATE} = E(\Delta Y) = E(Y_1) - E(Y_0)$ ..... (7)

This measure answers the question of what the effect would be if the enterprises of the population were randomly assigned to treatment. But Heckman et al. (1997) noted that this estimate might not be of importance to policymakers because it includes the effect for which the intervention was never intended. Consequently, the so-called average treatment effect on the treated (ATT) is the most crucial evaluation criterion, which concentrates solely on the effects on those for whom the program/interventions are introduced.

It is given by:$\tau_{ATT} = E(Y_1/D = 1) - E(Y_0/D = 1)$..... (8)

By subtracting$E(\frac{Y_0}{D} = 0)$ from both sides of equation 8, obtainthe specification for ATT.

$E(Y_1/D = 1) - E(Y_0/D = 0) = \tau_{ATT} + E(Y_0/D = 1) - E(Y_0/D = 0)$. ..... (9)

Both terms on the left-hand side are observable, and ATT can be identified if and only if $E(Y_0/D = 1) - E(Y_0/D = 0) = 0$(i.e., when no bias from self-selection). This requirement can only be met in studies when units are randomly assigned to treatments (i.e., when self-selectionbias is absent). In nonexperimentalstudies, some identifying assumptions must be introducedthat, conditional on covariate X, result Y is independent of treatment D to solve the selection problem.

In this case, the application of matchinga consistent assessment of the impact of interventions makes two assumptions.First, according to the conditional independence assumption, given a set of observable covariates X that are not affected by treatment, the potential outcomes Y are independent of the assignment oftreatment T. If Y_i^Trepresent outcomes for participantsand Y_i^Coutcomes for nonparticipants, conditional independence implies$(Y_i^T, Y_i^C) \perp D_i|X_i$.According to

Rosenbaum and Rubin (1983), this premise, also known as unconfoundedness, implies that program uptake is solely dependent on the qualities that have been seen. The second assumption is the common support condition: $0 < Pr\ (T_i = 1 | X_i) < 1$. This condition ensures that treatment observations have comparison observations nearby in the propensity score distribution (Heckman, LaLonde, and Smith, 1999). The PSM estimation of the ATT can be written as:

$$\tau_{ATT} = E[Y_1|D = 1, pr(x)] - E[Y_0|D = 0, pr(x)] \quad (9)$$

where pr(x) propensity scores; the mean difference in outcomes in the common support zone, weighted by the credit user's propensity score distribution, is known as the PSM estimator.

Ethics statement

This study was submitted to and approved by Salale University's institutional Research Ethics Review Board. Permission was obtained from the District and Woreda's Authorities, and participants. Participants of this study were willing to participate in the study.

4. Data Analysis and Discussion

Descriptive analysis

A total of 400 copies of the survey questionnaires were distributed to the respondents of the selected woredas. The return rate was 388 (97%), and the collected data were analyzedusing descriptive analysis and econometric models employed using Stata Software Version 15.1. As indicated in Table 1, of the total number of respondents with a full response, 54.64% were in thecontrol group and the treated groups were 45.36 %.

Table 1: Category of respondents to the control and treated groups

Group	Freq.	Percentage	Cum.
Controlled	212	54.64	54.64
Treatment	176	45.36	100.00
Total	388	100.00	100.00

Source: Own Survey, 2020

Table 2 shows that the group lending participants and their counterparts do not have significant mean differences in characteristics. In this study, the outcome indicators are income and employment creation. The data in the table showed that group lending participants have higher mean values than nongroup lending participants. The mean values and standard errors of the covariates for the respective groups are presented in Table2.

Table 2: Mean difference betweenthe treated and controlledgroupsbefore thematching

Variable	Treated Group		Control Group		Mean Diff	P-value
	Mean	Std. Dev	Mean	Std. Dev		
Age	30.99432	7.065811	29.31132	7.039312	1.68300	0.0198**
Gender	.6420455	.4807664	.6415094	.4806922	.000536	0.9913
Marital	1.545455	.8128833	1.410377	.6130383	.1350772	0.0631*
Education	2.880682	1.403046	2.735849	1.337054	.1448328	0.2996
Family size	3.477273	2.234674	2.891509	1.814247	.5857633	0.0046***
Dependency ratio	40.7715	67.76907	38.72483	66.12735	2.046664	0.7643
Experience	4.778409	2.916317	4.490566	2.558307	.2878431	0.3012
Initial capital	46763.24	93167.84	42014.47	133830.6	4748.767	0.6912
Total Capital	414689.5	953696.6	171070.2	432599	243619.3	0.0010***

Source: Own survey, 2020 significant at 10%; significant at 5%; and significant at 1%.

Econometric analysis

Propensity-score matching is a quasi-experimental option used to estimate the difference in outcomes between participants and non- participants, and consists of four phases: estimating the probability of participation (propensity score) for each unit in the sample; selecting a matching algorithm that is used to match participants with non-participants to construct a comparison group; checking for the balance in the characteristics of the treatment and comparison groups, and estimating the program effect and interpret the results.

Estimation of propensity scores

The probit regression model was used to estimate the propensity score (the probability of exposure of a unit to the group lending program) to match treatment with controls. The dependent variable in this model was binary, indicating whether the enterprises were a participant in the group lending that takes a value of 1, and 0 otherwise. Probabilities of being assigned to one of the two treatment groups were based on the selected covariate variables for all respondents. As stated in table 3, it

seems that the output of the probit estimate works well for the required matching exercise.

Table 3: Probit Regression Results

Probit regression number of obs = 388						
					Wald chi2(8) = 21.66	
					Prob > chi2 = 0.0056	
Logarithmic pseudo-likelihood = -256.71105					Pseudo R2 = 0.0395	
Treatment	Coef.	Robust Std. Err.	z	P>z	[95% Conf.	Interval]
Age	0.014155	0.012338	1.15	0.251	-0.01003	0.038336
Gender	-0.05161	0.141644	-0.36	0.716	-0.32922	0.22601
Marital	0.309629	0.098726	3.14	0.002	0.116129	0.503129
Education	0.057334	0.047638	1.2	0.229	-0.03603	0.150703
FamilySize	0.126191	0.046668	2.7	0.007	0.034723	0.217659
Dratio	-0.00138	0.001173	-1.18	0.239	-0.00368	0.000919
Experience	-0.01302	0.028051	-0.46	0.642	-0.068	0.041956
Icapital	-2.69E-08	5.81E-07	-0.05	0.963	-1.16E-06	1.11E-06
_cons	-1.40689	0.388795	-3.62	0.000	-2.16892	-0.64487

Source: 2020 own survey

Table 3 shows that the pseudo-R^2 value 0.0395 shows that it is easy to find a good match between the features of the treated and untreated households because the calculated households generally do not have unique characteristics.

As stated by Heckman et al.(1997) and Becker and Ichino (2002), to ensure the reliability of propensity score matching estimators, two econometric assumptions need to be considered. First, common support has been considered to ensure that treatment observations have comparable control observations nearby in the prosperity score distribution. Second, the conditional independence assumption (CIA) assumes that the effects of participation on group lending are not influenced by any correlation between unobserved factors and theselection of respondents for treatment (Imbens et al., 2004).

As indicated in Table 4, to estimate the prosperity score, 388 observations were used, and the results of this analysis showed that sufficient overlap after matching between treated and controls for 378 observations fell within the common support region (0.2713541, 0.7331824). This implies that the selection of treatment is based

entirely onobservable covariates (a strong assumption). In Table 4distribution of the PS score is presented.

Table 4: Distribution of the estimated propensity score

Variable	Obs.	Mean	Std. Dev.	Min	Max.
Controlled	212	0.4298404	0.0967247	0.245181	0.7331824
Treated	176	0.4826488	0.1291647	0.2713541	0.8636907
Total	388	0.4537947	0.1154906	0.245181	0.8636907

Source, Own Survey, 2020

Table 5: Number of treated and number of controls in the region of common support

psmatch2 Treatment assignment	psmatch2 Common support:		
	Off-Support	Insupport of	Total
Untreated	0	212	212
Treated	10	166	176
Total	10	378	388

Source: Own Survey 2020

As shown in Table 5, of the total sample households (388), 22 respondents (10 treated) were excluded from the analysis. Therefore, in the analysis,378 households from the sample were included, those with a common support region, and the rest were excluded from the analysis.

Choice of matching algorithm

Several matching techniques can be used to match the treatment and control households. Selecting the best matching estimator is determined by different criteria, such as the equal means test, pseudo-R^2, and matched sample size (Dehejia and Wahba 2002). A balancing test was performed to determine whether there is a statistically significant difference in the mean values of the covariates for participants and non participant respondents and was preferred when there is no significant mean difference. In this study, matched estimators such as nearest neighbors, caliper, and kernel with different bandwidths were considered. To test the validity of the matching quality, a straightforward method is used to compare the characteristics of an average household within the treatment sample with the corresponding characteristics of the control group. In the nearest-neighbor methods, the treated group comprises 166 observations, and the number of control groups comprises 212 observations; whereas in the caliper matching method, the treated group comprises 140, and the control group consists of 212 observations.

Equal mean tests, looking at low pseudo-R^2 values and a matching estimator that results in the largest number of matched sample sizes, are preferred to match the treatment program, and control households fall in common support. The matching algorithm is restricted to the common support. Imposing the common support condition in the estimation of the propensity score improves the quality of the matches used to estimate the ATT. Table6 presents the estimated results of the quality matching tests based on the three performance criteria. When looking at the result of the matching quality, the nearest-neighbour matching estimator (5) that balances all explanatory variables, contains a low pseudo-R^2value and has a large, matched sample size is the best estimator for this impact analysis. The kernel matching (0.05) was also the next best estimator, and the caliper (0.0025) was the third estimator in this study.

Table 6: Matching Performance of Different Estimators

Matching Algorithm	Performance Criteria		
	Balance test	Pseudo-R2	Matching Sample Size
NN (5)	8	0.005	378
Kernel (bw 0.25)	8	0.007	378
Caliper (0.025)	8	0.017	352

Source, Own Survey, 2020

Therefore, the closest neighbour matching estimator (5) was the best formatching analysis, since it resulted in a relatively low pseudo-R^2, the best balancing test-all covariates were insignificant after matching, and it also contains a large, matched sample size compared to other matching estimators. A low pseudo-R^2 value shows that a group loan participant generallydoes not have many distinct characteristics.

Testing the balance of propensity score and covariates

Once the best performing matching algorithm is chosen, the next task is to check the balance of propensity score and covariate using different procedures by applying the matching algorithm selected in the case of this study. As indicated in Table 7, the covariate balancetest was used for the match, which tests the significance of the mean difference between all covariates before and afterthe match.Therefore, the balance test was estimated by taking a deduction from the standardised bias between unmatched and matched individuals, and the equality of means was checked using the t-test and the chi-square test for joint significance for covariates.

Table 7: Balance of propensity score and covariates

Variable	Unmatched Matched	Mean		% bias	% reduct bias	T-test		V(T)/V(C)
		Treated	Control			t	p>t	
Age	U	30.994	29.311	23.9		2.34	0.020	1.01
	M	30.59	30.322	3.8	84.0	0.34	0.735	0.78
Gender	U	.64205	.64151	0.1		0.01	0.991	.
	M	.6506	.65537	-1.0	-788.9	-0.09	0.928	.
Marital	U	1.5455	1.4104	18.8		1.86	0.063	1.76*
	M	1.4578	1.4651	-1.0	94.6	-0.10	0.920	0.89
Education	U	2.8807	2.7358	10.6		1.04	0.300	1.10
	M	2.8675	2.9036	-2.6	75.0	-0.24	0.812	1.09
FamilySize	U	3.4773	2.8915	28.8		2.85	0.005	1.52*
	M	3.2952	3.3506	-2.7	90.5	-0.25	0.802	1.06
Dratio	U	40.771	38.725	3.1		0.30	0.764	1.05
	M	40.283	46.754	-9.7	-216.2	-0.86	0.391	0.93
Experience	U	4.7784	4.4906	10.5		1.04	0.301	1.30
	M	4.7108	4.5229	6.9	34.7	0.61	0.541	1.11
Icapital	U	46763	42014	4.1		0.40	0.691	0.48*
	M	46169	57256	-9.6	-133.5	-0.75	0.454	0.92
pscore	U	.48265	.42984	46.3		4.60	0.000	1.78*
	M	.46302	.46298	0.0	99.9	0.00	0.997	1.01

Source: Own survey 2020 * if variance ratio outside [0.74; 1.35] for U and [0.74; 1.36] for M

The estimated value of Rubin R [the ratio of treated to (matched) untreated variances of the propensity score index] is 1.11 which is actually within the standard value of (0.5, 2). In addition, Rubins' B [the absolute standardised difference of the means of the linear index of the propensity score in the treated and (matched) nontreated group] value is estimated to be 24.3 percent, which is less than 25%. This evidence shows that the samples are thus sufficiently balanced. Furthermore, the standardised bias difference in the covariates before matching is between 2% and 86.1% in absolute value. However, after matching, the remaining standardised difference for all covariates was between 0.3% and 17.5% in absolute value, which is less than the

critical level of 20%, as explained by Rosenbaum and Rubin (1985). Similarly, the t valuesin the same Table 6 show that before matching the selected explanatory variables, six variables showed statistically significant differences, but after matching, all variables were balanced.

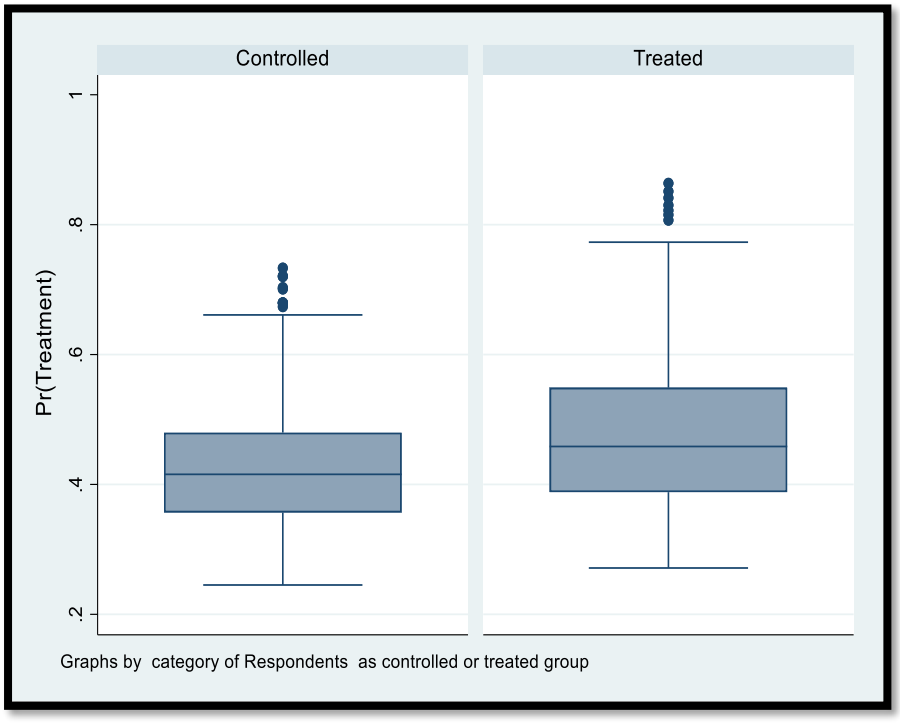
Table 8: Test the joint significance of the variables

Test the joint significance of the variables								
Sample	Ps R2	LR chi2	p>chi2	Mean Bias	Med Bias	B	R	% Var
Unmatched	0.043	22.74	0.007	16.2	10.6	45.6*	3.72*	50
Matched	0.005	2.45	0.982	4.4	3.3	17.0	0.69	13

Source: Own survey 2020

Table 8 result indicates that before the match, some variables exhibited statistically significant differences. However, after matching, all covariates were balanced and no significant differences were found. Accordingly, using nearest-neighbour matching has provided a valid matching for all covariates. In the same way, the use of kernel- and caliper-based matching is valid. The low pseudo-R2 and insignificant likelihood ratio tests support the hypothesis that both groups have a similar distribution of covariates after matching. This allowed us to perform an impact analysis.

Figure 2: Propensity score box plot of group lending



Figures 2show the propensity score box plots for enterprises that engaged in group lending (treated) and those that didn't engage in group lending (control) group; as Figure 3 indicates that the distribution of the propensity scores beforeand after matching. Both Figure 2 and Figure 3 show that there is a good overlapping condition, and suggestthat the chosen matching algorithm is the best. Hence, wecan estimate ATT.

Figure 3: Propensity score distribution before and after thematch

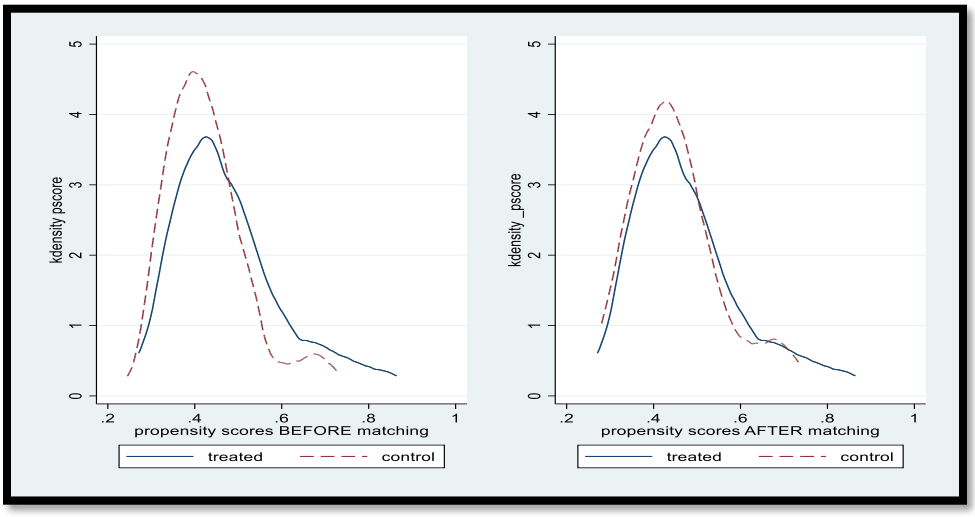


Figure 4: Density of propensity scores before and after imposition of the group lending

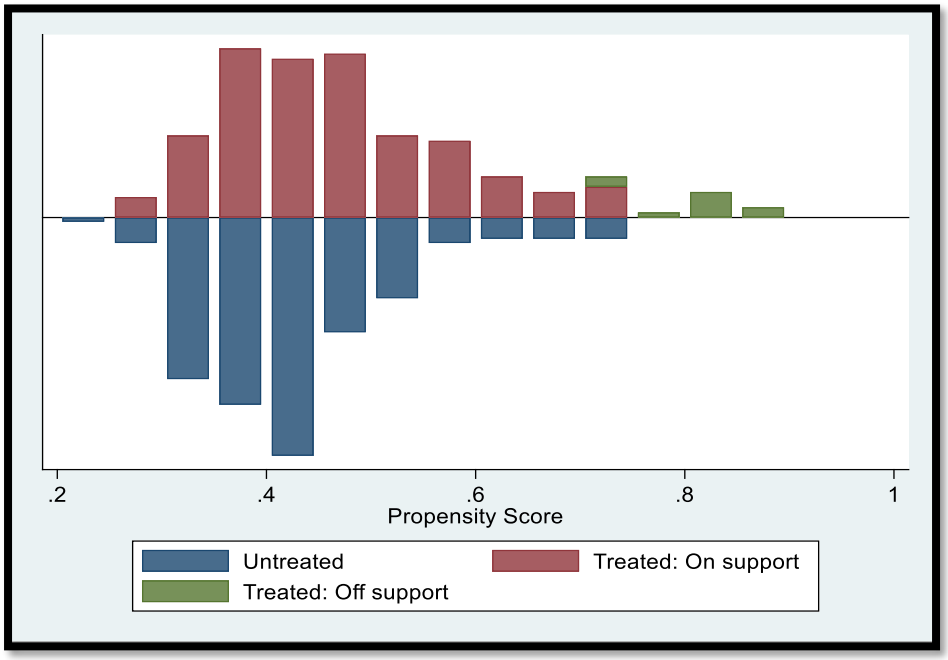


Figure 4 shows that the density of propensity scores before and after the imposition of the commonsupport. This shows how well the treated and control groupsare matched, and comparabilityis improved

Estimation of the average effect of treatment on the treated (ATT)

Using the pretreatment variables in Table 8 above, the propensity score would have been derived using probit regression. With this functional specification, the balancing hypotheses are satisfied. Then the average effect of treatment on the treated variables (ATT) of the impact indicator variables (total income of the energised and creation of jobs) using the matching of propensity was provided. Table 9 provides the ATT for the total income and employment estimated by matching treated and control observations.

Table 9 shows that the participation of enterprises in the group lending program has a significant impact on the income of enterprises using the nearest-neighbourhood matching method at a level of significance of 5% (t = 3.00). The ATT treatment on enterprise income was 254567.96. Participants are on average more annually spent Birr 254567.96, compared to nonparticipants. The ATT using the kernel matching result shows a higher impact (254114.25) and significantly more household expenditures (t = 3.08) for enterprises that participate in group lending. ATT using the caliper matching result shows an increased impact (264580.379) and significantly higher household expenditure (t = 2.85) of the enterprises participating in group lending. The number of matchedindividuals was more or less consistent in all matching algorithms. The robustness of the result of the matching algorithm showed that the participation of enterprises in group lending increases income.

Table 9: Estimation of the average effect of treatment on the treated

Variable	Matching Estimator	Matching sample	Mean (ATT) Treated	Control	Diff	St.Er	T.Stat
Total Income	NN (5)	378	433697.867	179129.904	254567.964	84893.8589	3.00
	Kernel (bw 0.05)	378	33697.867	179583.643	254114.225	82378.9808	3.08
	Caliper (0.0025)	352	403078.9	138498.521	264580.379	92678.3832	2.85

Employment Creation	NN (5)	378	2.25301205	2.07710843	.17590361 4	.3810215	0.46
	Kernel (bw 0.05)	378	2.25301205	2.04362179	.20939025 5	.34360081 8	0.61
	Caliper (0.0025)	352	2.26136364	1.93396226	.32740137 2	.33190156 7	0.99

Source: Own Survey, 2020

Thus, all the matching algorithms used above give similar results. The minimumnumber of treated enterprises considered in the ATT estimation was 140, and the maximum was 166; while the minimum and maximum number of control among these matching algorithms were 212. A positive value of the average effect of treatment on the treated (ATT) indicates that the annual income of the enterprises has improved as a result of the acceptance of credit through the group lending program in the study area. Consequently, participation in the group lending service has increased the total annual income of the enterprises by 254114.23 to 264580.38 ETB 2129.7 which is very higher than the income of non-participant enterprises. The impacts of group lending on employment creation range from 0.18 to 0.33 persons, which is a concept of statistics, but there is no such person in reality. In the study area, the impact of group lending on employment creation is insignificant, which means that there is no significant difference in creating jobs between MSEs who participate in group lending and those who did not participate. This is very different from the findings of most previous studies and could have occurred because MSE owners were not investing in the expanding scale of business and the existing self-employment activities (or most of them havenot been successfully transformed to investment and large-scale enterprises). Additionally, the employment growth of MSEs could be negatively affected by the credit utilisation challenges faced by enterprises.

Sensitivity analysis

In this study, efforts have been made to obtain the best possible estimate of the causal effect of treatment on outcome variables by performing sensitivity analysis. Sensitivity analysis is a final diagnostic that must be performed to check the sensitivity of the evaluated treatment effect to unmeasured characteristics that affect both the assignment in treatment and the outcome variable. After estimating the ATT, it is necessary to check whether the ATT obtained is effective. This helps to verify whether inferences about the effect of group lending participation are altered by the

presence of unobservables that affect both the probability of receiving treatment and the outcome variables. To ensure the absence of such problems, rebounds 25 have been employed as suggested by Rosenbaum (2002) and Becker and Caliendo (2007).The null hypothesis is the statement that there is no treatment effect. That is, the impact of participation on outcome variables is due to confounders. Or equivalently, the impact on the outcome is due to hidden bias or unobservable covariates. Treatment effect estimators are not robust against hidden bias if unobserved factors that affect participation are also correlated with the outcomes. If a given study is not affected by unobserved characteristics, the effect of unobserved variables will be zero. As a result, the probability of participation is determined only by the observed characteristics. But if there is unobserved bias, even if the two individuals with similar observed characteristics have different chances of receiving treatment. Based on this concept, the sensitivity analysis was conducted. Consequently, the results of Rosenbaum show that the test statistics and the respective p values for different values of gamma (the critical values of gamma) become significant at a 95% confidence level, implying that the nullhypothesis is rejected. Therefore, the impact on the outcome is due to the effects of treatment and not to unobserved factors for all the outcome measures considered. Means that the result is less robust to unobserved heterogeneity.

Table 10: Sensitivity Analysis

Outcome	$\gamma = 1$	$\gamma = 1.25$	$\gamma = 1.5$	$\gamma = 1.75$	$\gamma = 2$
Income	0	0	0	0	0

Source: own estimation, 2020

Table10shows that the effect of group lending onincome was not altered, although participants and nonparticipants were allowed to differ in their chances of being treated up to 100% (γ=2) in terms of unmeasured characteristics. This implies that, for the outcome variables computed at a different level of the critical value of gamma, the critical values of p were statistically significant. So, it can be concluded that the Impact Estimate (ATT) of this study is insensitive to hidden bias.

Factors that Affect the Credit Use of Enterprises

Analysis of closed-ended data

The probit model was used to analyse the various factors that affect the credit use of the enterprises in the study area. Table 11 reports the estimation results of the probit model. The Wald chi-square test is used as a measure of the overall significance of a model in probit model estimation. The result of the probit model shows that the probability of the chi-square distribution (87.41) at 19 degrees of freedom is 0.0000,

which is significant at 1%. Therefore, this shows that the variables included in explaining credit use fit the model at a probability level of 1%.

Table 11: Factors That Affect Credit Utilization of Enterprises

Probit regression Number of obs=176
Prob > chi2 = 0.0000
Wald chi2(18) = 87.41
Log pseudo-likelihood = -18.680Pseudo R2 = 0.4010

Credit utilization	Coef.	Std. Err.	z	P>z	dy/dx	Std. Err	z	P>z
Age	-.5115751	.3494425	-1.46	0.143	-.1261059	.08297	-1.52	0.129
Age2	.008458	.0052302	1.62	0.106	.0020849	.00126	1.66	0.097
Gender	.5213535	.4959376	1.05	0.293	.1400652	.14763	0.95	0.343
Marital	-.3225453	.3888127	-0.83	0.407	-.0795091	.08996	-0.88	0.377
Education	.5667659	.2782192	2.04	0.042	.1397107	.06416	2.18	0.029
FamilySize	-.1150848	.1191781	-0.97	0.334	-.028369	.03042	-0.93	0.351
Dratio	-.0091337	.0050047	-1.83	0.068	-.0017518	.00128	-1.37	0.169
Experience	-.0389058	.1837221	-0.21	0.832	-.0095905	.04678	-0.21	0.838
Experience2	.0013968	.009135	0.15	0.878	.0003443	.0023	0.15	0.881
Icapital	3.83e-06	2.61e-06	1.47	0.142	-9.44e-07	.00000	-1.40	0.161
Savings per month	.0002385	.0001022	2.33	0.020	.0000588	.00002	2.37	0.018
Income allocation	.1773769	.293871	0.60	0.546	.0437243	.07715	0.57	0.571
Market access	.6048427	.3070271	1.96	0.050	.1607654	.16017	1.00	0.316

Motivation	3.131567	.8108449	3.86	0.000	.7719474	.27518	2.81	0.005
Interest Rate	-1.89063	1.057005	-1.79	0.074	-.3020133	.09365	-3.22	0.001
Support & monitor	1.158269	.5861294	1.97	0.048	.2551068	.10659	2.39	0.017
Training	.9204804	.4414901	2.08	0.039	.2713555	.20393	1.82	0.063
Credit amount	3.00e-06	4.63e-06	0.65	0.517	7.40e-07	.00000	0.63	0.527
Cons	8.787722	5.282248	1.66	0.097				

Source: Own Survey, 2020

The results of the probit regression analysis indicated that education, savings per month, market access, motivation to new business, support and monitoring, and training have a positive and significant influence on the probability of credit use. The dependence ratio and the interest rate have negative effects on the probability of using credit wisely, and both are statistically significant at a level of significance of 10.The remaining explanatory variables have an insignificant effect on credit utilisation. The marginal effect shows that as education increases by one or more levels of school, the probability of wise use of credit by the enterprise increases by 14%. This indicates that education increases the understanding capacity of credit management and its wise use in running the business. As a saving per month of enterprise increases by one ETB, the probability of wise utilisation of credit increases by 0.0059%. Similarly, for a unit increase in Motivation, Support & monitor, and training, the probability of credit utilisation increases by 77.19%, 25.51%, and 27.14% respectively; while a unit increase in interest rate results in the decrease of the probability of utilising credit by 30.20%. The results of the probit model also revealed that market access has a positive and significant effect on credit utilisation at 5%. A unit increase in market access results in an increase in credit utilisation of 16.07%.

Analysis of Open Data

As presented in Table 12, the analysis of data obtained through an open-ended questionnaire classified challenges into workplace and environment related challenges, system related challenges, demand and supply related challenges Infrastructure problem, market related challenges, finance related challenges and business administration related challenges. Among this, the most significant factor that affects enterprise activities is market-related challenges like lack of suitable

location, no promotion of goods and services, no access to information, fluctuation of markets, decrease in the number of customers, high cost of inputs, expensive house rent, obstacles to the market supply chain, market inaccessibility, unavailability of supplier of inputs. This indicated that the lack of access to the market for their products and services and asymmetric information results in the failure of enterprises in market competition in terms of supplying quality goods and services and price. The next factor that affects enterprises is the financial challenges related to loans, such as lack of a loan, limited access to formal credit without collateral, and high interest rates. The third problem is related to the workplace environment, such as a narrow shed, an inconducive place of work, and the distance from the city center.

In the country, several microfinance institutions have been established and have been active in resolving the poor's credit access problem. However, the availability of financial and financial support services is still critical for the creation and growth of an enterprise. In this study, owners of enterprise have indicated that lack of financing was their major setback. The inaccessibility of financial support has proven to be a constraint for women entrepreneurs in starting businesses and mobilising capital to expand or diversify their business. Infrastructure-related challenges include fluctuation inelectricity, inadequate sanitation, road problems, and poor storage quality. The other challenge is related to the system, support, and monitoringwhich include the absence of fair support from the government, rent seekers and bureaucracy, unfair, and high tax payments, and no means of monitoring enterprises by the financial institution that provides the loan. The last challenge was business administration-relatedchallenges, such as business ownerswho do not work for new businesses and who are poor in the administration of the existing business.

Table 12: Challenges for Enterprises'Activities in using Loan

Challenges	**Freq.**	**Percentage**
Workplace and Environment-Related Challenges	48	12.37
System-related challenges	16	4.13
Infrastructure Problem	25	6.44
Market-related challenges	152	39.15
Finance-related challenges	99	25.52
Business Administration-Related Challenges	10	2.58
Non-Response	38	9.81
Total	388	100

Source: Own Survey, 2020

Key Informative Interview Analyses and Interpretation

To support the findings obtained from the survey questionnaire, the researchers interviewed MSE office leaders and microfinance leaders in Salale. Consequently, the result of the interview is presented hereas narration. The interview results were merged and discussed based on the similarities in the responses. This was qualitatively analysed to supplement the quantitative data. The MSE leaders responded that many enterprises showed growth and improvement through the use of credit. There is a very good improvement in agriculture-based enterprises. However, many challenges hinder the performance of MSEs. According to the responses of the MSE leaders of the woredas, the existing problems are the following. OCSSCO is reluctant to provide and collect the loan, there is a loan shortage, OCSSCO does not provide a regular loan unless 97% of the loan is repaid, and although 40% of the performance of woredas is measured by the performance of MSE, the government is not providing enough offices, facilities, and budget. Furthermore, Woredas leaders of MSE have responded that since Youth-funded MSEs grouped by MSE offices are repaying the loan within 3 to 5 years at an 8% interest rate, the loan-provider process of OCSSCO is very complex. But enterprises grouped by OCSSCO repay their loan within one year at 13 %, and the process is simple. Because of this, microfinance institutions are providing priority to enterprises grouped by the government.

Although the MSE office leader of Salale mentioned that there is some unpaid loan by MSEs; there is good repayment of the loan in the Zone. There are improved and transformed MSEs: for example, 44 MSEs were transformed intoindustry in 2019. However, now there are unsolved problems like the shortage of finance/credit, unfulfilled facilities, the shortage of budget, the inaccessibility of the market for the products of MSEs, the failures of some MSEs because of the misuse of credit, and the underutilization of resources. In addition to this, the zonal leader pointed out that there are many underused resources in Salale, such as mines, minerals, and tourist areas, that are not being investedin by MSEs. Therefore, they forwarded their suggestion to Salale University to investigate underutilized resources in Salale. On the other hand, the OCSSCO manager said that the MFI is working according to the MFI rule devised by the National Bank of Ethiopia; priority is given to unemployed youth. But fulfilling all credit demand is difficult due to a shortage of finance/liquidity. Furthermore, no system tolerates unpaid loans according to the schedule, even if MSEs are on the right track. This means that there is no system to extend the repayment period (the main problem)if the business is running properly.

However, the MSE offices' leaders and workers are not strong in monitoring and advising MSEs; only OCSSCO strictly follows enterprises. The business plan of enterprises is not prepared without the involvement of the business owner, is not

properly prepared, and is not strictly evaluated by MSE Offices, so that there is the failure of the business. There is a Council at all government structure levels that regularly evaluates the performance of MSEs. The members of this council come from five offices: OCSSCO, MSE Offices, TVET, Youth, Children's, and Women's Offices, and Social Affairs. However, this Council is not effectively functional. woredas MSE office leaders are assigned to non-powerful persons.

5. Conclusions and Recommendations

Conclusions

This study revealed that the group lending program has a positive and significant impact on the income of the enterprises. The micro and small enterprises that had taken a loan in-group have a very higher total annual income from 254114.23 to 264580.38 ETB than MSEs that did not take the loan in the group. Therefore, the positive and significant impact of credit on the group encourages and strengthens MSEs andscales up their business to the next level to achieve the expected change. However, the group lending programdoes not have a significant impact on employment creation in the study area; therefore, there is no significant difference in job creation between MSEs with and without credit in the group, which could have occurred.

The study also found that the probability of credit use and the overall performance of the enterprises were affected by low motivation, education, poorsavingshabits, marketaccessibility problem, absence of effective government support & monitoring by the government, and lack of training, market problems, lack of finance, inconducive work environment, and ineffective intercommunication and cooperation between OCSSCO and the MSE offices on monitoring and guiding the MSEs; and rule gap; meaning, there was no system to provide extra loan to the MSEs that is on the right business track, unless the previous loan is repaid.

Recommendation

The Ethiopian National Bank and financial institutions need todevelop a system to provide loans on the loan (provide additional loans, even if the previous loan is not repaid) to enterprises that are on the right track in business. This study recommended that the Ethiopian National Bank, Government, and Financial Institutions grant enterprises and the poor access toloansbasedon the feasibility and productivity of the business plan through effective monitoring and guidance rather than a personal grant. NBE and the government are also suggested to develop a system or legal background to direct various banks and other financial institutions to provide loans to MSEs and the poor without collateral in Ethiopia. Besides, all concerned bodies need to work on the development of MSEs through starting business development services/advisory and providing effective training. By having

these measurements, credit constraints will be relaxed, and enterprises' performance will be boosted.

This study suggests that the local government and OCSSCO have a common and effective planand a monitoring, support, and evaluation system for the performance of enterprises. This study also suggested that Salale University and other similar institutions provide different training and business development services/adviceon entrepreneurship, business planning, business administration, market and supply chain management to improve the effectiveness, productivity, and competency of enterprises. Furthermore, SlU is recommended to conduct more studies in advance, especially on the use ofunder-used resources in the zone through MSEs. The study also advised that MSE owners should focus on creating new businesses, expanding the existing business.Furthermore, MSE office leaders must be strong decision makers to realize the significant contribution of enterprises to capital accumulation and reduce unemployment.

Author Contribution

Belay.K's (corresponding Author) contributions were: - Conceptualization, Methodology, Software, data curation, Formal analysis, and writing review and editing; whereas the contributions of Belay, K, Hailu.T, and Aster, T, werevalidation, writing - original draft preparation. All authors have read and agreed to the published version of the manuscript.

Data Availability Statement

Data obtained by survey research support the findings of this study and are available based on request through contacting the corresponding Author.

Disclosure of conflict of interest

The authors declare that there are no competing financial interests or other interests. Therefore, there are no conflicts of interest to disclose.

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List of Tables

List of Figures