Does credit access matter for household livelihood diversification in Ethiopia? An evidence from logistic regression model

Kiros Nigus Tsegay^{(a)*} Hongzhong Fan^(b) Hailay Shifare^(c) Priyangani Adikari^(d)

^(a) Ph.D. Scholar, School of Economics, Huazhong University of Science and Technology, Wuhan 430074, China

^(b) Professor, School of Economics, Huazhong University of Science and Technology, Wuhan, 430074, China

^(c) Ph.D. Scholar, School of Public Administration, Huazhong University of Science and Technology, Wuhan 430074, China

^(d) Senior Lecturer Department of Economics Faculty of Social Sciences and Humanities, Rajarata university of Sri Lanka, 50300, Mihintale, Sri Lanka.

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ABSTRACT

This study examines the effect of credit access on both agricultural and off-farm activities based on a household survey of 371 rural farmer respondents in Ethiopia. It was analyzed using a logistic regression model and statistical description. Findings demonstrated that the demographic factors; gender, age, level of education, and family size have a positive and significant effect on credit access. Agricultural credit access is impacted by each of the demographic variables as independent variables. On the other hand, the result indicated that the relationship between credit access and non-farm economic activities has a negative relationship. Credit access has a significant effect on agricultural intensification and specialization rather than diversification. Therefore, a comprehensive policy and strategy needs for credit access in both the agricultural and non-agricultural sectors. The Ethiopian government should follow the integration policy between both sectors and participate in livelihood diversification strategies and achieve sustainable development goals by 2030 at large.

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Introduction

Agriculture is the backbone of economic development in developing countries like Ethiopia. Smallholder farmers should use agricultural inputs and technologies to increase their product and productivity. However, smallholder farmers have a shortage of credit access from the formal financial sector because they have no physical collateral. The government of Ethiopia distributed the microfinance institutions from the small town and by their cooperatives for credit access. However, rural households still face the problem of credit access. The prior studies give little attention to the effect of credit access on both agricultural and none agricultural economic activities as the sometimes the relationship between them to credit access.

Credit access is significantly important to single household heads to ignore to meet their financial gap (demand) and to diversify their livelihood source (Abrha, 2015). Agricultural Credit access is important for rural farmers because it can reduce household problems while aiming to purchase agricultural inputs; and henceforth overlays the way farmers can apply inputs on time in that way increase the production and productivity and as the result, farmers will increase their income from farming. And farmers able to participate in the non-farm economic activities the previous studies approved that credit access and agricultural inputs and technologies have final estimation result access credit was expected to have a positive sign both for chemical fertilizer apposite and significant in the adoption decision process (Science et al., 2014).

During the era of the Asian Green Revolution in the 1970s, there was inclusive government and donors support to smallholder farmers by subsidies, credit access, fertilizer, both fixed and floor prices during the era of the Asian Green Revolution (Karunaratne et al.,

* Corresponding author. ORCID ID: 0000-0002-0163-1440

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2020; Kim et al., 2018; Otsuka & Larson, 2013). However, it was very difficult to repeat the same history in African countries it was because of the structural adjustment program (SAP) of the 1980s and 1990s by implication rejected the government subsidy of credit access and other agricultural technologies to smallholder farmers such policy was appreciated by Asian countries and reduced the government-subsidized agricultural support. After this time onwards, smallholder farmers take technological inputs based on credit not by subsidies from the government. The structural adjustment of the Washington consensus gives room both to the donors and cooperatives. However, farmers in developing countries were not satisfied and it was disproved in providing credit access because the agricultural credit which was provided by the non-governmental organizations was short in time for repayment and very small amount (Archibong et al., 2021). Smallholder farmers need to get Agricultural credit. It is defined as banking finance and can use for both primary production and processing agricultural products. And the production and distribution of inputs (Aggelopoulos et al., 2011; Kokotsaki et al., 2014).

Smallholder farmers almost have no advantage to borrow from the formal financial sector because formal financial sectors like commercial banks can give credit access only if the borrowers have physical collateral. But poor farmers have no physical collateral (Mehta, 2018). Providing access to formal financial services to the poor who lack resources to fund themselves or collateral to obtain a bank loan because they may not have clear title deeds for the land to be considered as bankable assets (Mehta, 2018). Smallholder farmers are constrained by the lack of assets because they have a problem with both extension and credit service. In this case, Cooperatives are helpful because farmers get access to credit services and extension services. Cooperatives are willingly established by the farmers. As credit organizations favor group loans, farmers collectively improve access to finance through pooled resources required for the down payment and can overcome problems of large investments needed in processing technologies, storage facilities, or transport (E. Saqib et al., 2018; Mehta, 2018).

Micro-credit schemes are often associated with group lending where peer pressure is an effective substitute for collateral and group members may take action to prevent one member from defaulting (Mehta, 2018). After structural adjustment programs were implemented in many countries, nongovernmental organizations provide micro-finance services in the rural areas to fill the case by the abolishment of the agricultural credit previously provided by the government. In developing countries, lack of money is the most critical problem for farmers (Kwon et al., 2006). In the absence of credit arrangements, farmers are forced to use a large proportion of their income to purchase inputs such as fertilizers and pesticides (Pfeiffer et al., 2009). Off-farm income makes farmers able to fulfill the monetary requirements for new technology. There is a positive relationship between off-farm income and the value of an investment in agriculture (Nkegbe, 2018).

In line with this, (Alene & Manyong, 2007) found that a one percent increase in off-farm income increase fertilizer demand by 0.22 per cent the adoption of production enhancing inputs may increase or decrease depending on the availability of credit and /or off-farm employment. In addition, agricultural growth and increasing demand for manufactured goods and services could causes for increasing non-farm rural employment. However, the small holder farmer's participation in non-farm activities, in African countries at large and Ethiopia in particular is very limited. Above 85% of the population is depending on subsistence farming with low technologies (Amdissa, 2006).

The big reason for the small holder farmers not to adopt new agricultural technologies is because they are challenged by limited agricultural access credit. which impeded the small holder farmers in fertilizer adoption. The shortage of access to credit is not only reduced productivity but also it is a problem for the capability for smooth consumption (Amdissa, 2006). In most case small holder farmer in Ethiopia can only apply for small amounts of credits. The previous studies have been more focused on the effect of socio economic factor and access to the agriculture (E. Saqib et al., 2018). However, the effect of credit access in livelihood diversification and the relationship between farm activities and non-farm activities was ignored in the previous studies. Hence, it is imperative to study the effect of credit access in household livelihood diversification in the country. Therefore, this study aims to examine the effect of credit access on both agricultural and off-farm activities based on a household survey of 371 rural farmer respondents in Ethiopia. it was analyzed using a logistic regression model and statistical description.

Literature Review

Credit Access and Agricultural Intensification

Agriculture is the backbone of economic activities in Ethiopia. And that upgrading leads to better aggregate growth justifies the public investment in the sector (De Janvry & Sadoulet, 2010). Ethiopia is one of the largest African countries with a population of 107 million people. According to (Feuchtner et al., 2019) the majority (85%) of Ethiopians reside in rural areas. Hence, subsistence and rain-fed agriculture is the economic base and means of livelihood of the majority of these people. The contribution of agriculture to GDP in Ethiopia is above the average contribution of sub-Saharan Africa. The share of the agriculture sector in sub-Saharan Africa is around 35-40 per cent (Tomsik et al., 2015). On the Other hand, the contribution of the agricultural sector to GDP in Ethiopia is 41 % (Okereke et al., 2019).

Similarly (Diao et al., 2010) confirm that an agricultural stimulated growth of one percent annual increase in Ethiopia's per capita GDP leads to a 1.7 percent per capita reduction in the poverty rate per year. On the other hand, if some increase in per capita GDP is caused by non-agriculture, its impact on poverty reduction is only 0.7 percent thus, the government of Ethiopia has tried to improve

the performance of agriculture by planning and implementing different strategies. agriculture development-led industrialization (ADLI) is the central pillar of the economic policy of the country. The sustainable development and poverty reduction program (SDPRP), a plan for accelerated and sustained development to end poverty (PASDEP), and the recent growth and transformation plan (GTP) were some of the development strategies of the government.

Agriculture development-led Industrialization (ADLI) is a long-term strategy in which, at the early stages of development, the agriculture sector is expected to play a leading role in the growth of the economy (Dube et al., 2019). At this stage, agriculture is considered to be the engine of growth to feed large proportions of the population and the major economic activities are related to agriculture which has a strong growth linkage with other sectors (Ch, 2013). In line with these arguments, there is a considerable body of literature that favors the idea that agriculture growth serves as an engine of growth and that irrigation –led technological changes are the key drivers behind the growth of productivity in the agriculture sector in Asia (Imai et al., 2017). But, in Ethiopia, the ultimate goal of ADLI strategy is for the industry to take the lead (Ch, 2013). A plan for accelerated and sustainable development and to end poverty (PASDEP) was a five-year plan (2005/06-2009/10) that put due emphasis on the commercialization of agriculture and integrating farmers with markets (Abrha, 2015). In addition, during the period of PASDEP, the supply of agriculture inputs such as fertilizer, improved seeds, and pesticides was expected to increase substantially (Amdissa, 2006). Five years later PASDEP was replaced by the growth and transformation plan (GTP). The main focus of the GTP related to agricultural and rural development is to increase the capacity and extensive use of labor enhance the utilization of land, link specialization with diversification, and strengthen the agricultural marketing system (Abrha, 2015).

African governments have promoted the increasing use of agricultural input in their own countries inspired by the African Green Revolution which was brought about by using high-yielding seed and fertilizer technologies. (Shilomboleni, 2018). in similar (Tadele, 2017) argued that the entry point for agricultural intensification is the use of organic and inorganic fertilizer in the Sahel because soil fertility is a prerequisite for agricultural production and productivity. For the fertility of soil enhanced varieties of crop alone may not increase crop productivity if it is not complemented with best soil management. (Rashid et al., 2013) further indicated that the objective of input promotion strategies has many features such as financial, economic, social, and political objectives. The financial specs of the input promotion strategy are to increase the net income of farmers, traders, or other participants in the agricultural economy.

The economic feature of input promotion strategies is also to increase the real income of the society as a whole. The social aspect of the input program is an improvement of welfare indicators that are deficit to measure in terms of monetary values. Some of the social objectives are to improve nutrition intake and national food self-sufficiency. Therefore, to use such technologies smallholder farmers need credit access to purchase agricultural technologies for agricultural intensification of their product. However, in most developing countries, lack of money is the most serious problem for farmers (Kwon et al., 2006). Technologies in the absence of credit arrangement, farmers are forced to use a large proportion of their income to purchase agricultural input such as fertilizer and pesticides, and other motor pump technologies (Pfeiffer et al., 2009). The provision of credit access helps rural smallholder farmers to diversify (Abraham, 2018; Benjamin, 2013; Science et al., 2014; Tafese, 2014). De debit credit and saving institution (DECS) is a famous microfinance institution in Ethiopia. This institution has a branch in rural areas undertakings to the smallholder farmers Near to other resident (Berhane et al., 2009; Tafese, 2014).

It is possible to define Agricultural credit as banking finance that smallholder farmers use for both primary production and processing agricultural products (Aggelopoulos et al., 2011). Smallholder farmers have no opportunity to borrow credit access from formal financial institutions. It is because poor farmers have no physical collateral considered as a bankable asset for commercial banks. As a result, these financial instructions are primarily appropriate for the non-poor population and henceforth (Mehta, 2018). The big reason for this problem is it is because smallholder farmers have no clear title deeds for the land to be considered as bankable assets. In this case, cooperatives play a great role because rural farmers can get credit access services. Smallholder farmers are constrained by the lack of assets because they have limited access to extension as well as to credit service. To solve such problems small farmers willingly establish cooperatives (Benson & Jafry, 2013).

The credit organizations need social collateral and encourage group loans this results in farmers collectively improving access to finance through pooled resources and required for the down payment and can solve problems of large investments needed in processing technologies, storage facilities, or transport (Ashby et al., 2009). As the result of structural adjustment programs, in many developing countries donors (non-governmental organizations) provide credit access services in the rural areas to fill the cased by the abolishment of organizations provide micro-finance service in the rural areas to fill the cased by the abolishment of agricultural credit previously provided by the government. However, smallholder farmers were not satisfied because the credit which was provided by the non-governmental organization has limitations both in time and the amount of loan very short period for repayment and a small amount of loan respectively (Behuria, 2018).

Credit Access and Livelihood Diversification Out of Farming

Rural farmers in developing countries have a problem of money and it is the most critical challenge for farmers. As a result, the farmers are pushed to use a large proportion of their income to purchase inputs such as fertilizer and pesticides (Pfeiffer et al., 2009). In this case, the participation of farmers in the off-farm economic activities plays a great role and farmers can fulfill the monetary requirements for new technology. The previous studies found that the value of agriculture activities and non-farm economic activities

have a positive and significant relationship. As indicated and discussed detailed in the literature Ethiopia follows Agricultural Development Led Industrialization (ADLI) this policy receiving strong political support as the engine of economic growth and poverty reduction in Ethiopia. hence, agricultural credit and input-output marketing have a strong connection to small towns and towns (Gebre & Gebremedhin, 2019). In this case, rural towns have a big role because smallholder farmers can participate in non-farm employment opportunities out of their farm and by other input and output products and serve as a concentration of development (Reardon 2015).

In Ethiopia, the strategies and policies of economic development should be in place to inspire agricultural production and other income diversification. Research conducted by (Ogutu & Qaim, 2019; Rodríguez-Pose & Hardy, 2015; Teferi et al., 2020; Wheeler & Von Braun, 2013). Development clearly stated that constraints such as poor land quality, lack of financial market, and climate variability population growth cannot be improved by farm operators at the household level. (Mansor2 & Mahir2, 2014) explained that these are constraints that can be solved by investing recourse in income and wealth-generating activities. Current studies indicate that the singular focus on farming economic activities has become a risk. Because if rural farm households depending only on the agricultural source of livelihood cannot provide for the entire needs of rural households. In this case, the participation of smallholder farmers in non-farm activities plays a great role in economic growth and sustainability. consequently, helps to improve the food security status of the rural dweller. Diversification income sources are becoming an important means of rising rural household income and cushioning the risk associated with environmental and climatic changes.

Research and Methodology

Area of Study and Sample Method

Our data were collected using a multi-stage sampling technique. First, there are money reasons why Tigray national regional state from Ethiopia is selected for this study. The most important reason is that this region is one of the older human settlements in Ethiopia's history. Thus, its land is highly fragmented and degraded compared to the other regional state of the country. This region is, therefore, in need of research findings concerning the issues of livelihood diversification both on agricultural production and off-farm economic activities in relation to credit access. Second, sample household heads were selected as the target population of 5084 rural farm household heads were proposed. We employed the Yamane formula (T.Isip, 2010) with a 5% error and 95% level of confidence. At the third stage, systematic random sampling was employed to select respondents for collecting the data from 371 farm household heads in the study area.

The selected variables

We have selected variables as the first model and the second model. in the first model we use agricultural credit access as the dependent variable to see how demographic characteristics such as education, experience, or age. Families size percent and gender influences credit access. On the other hand, we use model two, and credit access is the independent variable to see how credit access influences rural household heads in participation in non-farm activities.

Model specification

We employed the logistic regression model to examine factors influencing credit access and to explore the effect of credit access on non-farm economic activities. The model was specified as the following equation.

$$Y_i = \beta_i X_i + \varepsilon_i$$

Y is the latent variable observed by the following Condition?

$$\begin{cases} Y_i = 1, & \text{if } Y_i > 0 \\ Y_i = 0, & \text{otherwise.} \end{cases}$$

The logistic function is equal to the log odds of a variable. If the probability of p is $Y = 1$ probability occurrence of an event then $p(1-p)$ is the corresponding odds. The logit of probability p is given by

$$\text{Logit}(p) = \log\left(\frac{p}{1-p}\right)$$

Logistic function; A logistic curve is just like a sigmoid curve and is obtained by the logistic function given by

$$\ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$$

Logistic Regression Equation

The logit of each predictor (independent variable) is given a coefficient 'b' which measures its independence contribution to variation in the dependent. The dependent variable can only take on one of the two values; 0 or 1.

3.1.4. Model Development

Logistic regression model gives the formula to predict a logit change likelihood of the presence of the character of interest, so, the model is

$$\text{logit}(p) = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + \dots + b_kX_k$$

p

Now p is the possibility of occurrence of the representative of attentiveness. The logit transformation is defined as the logged odds;

$$\text{odds} = \frac{p}{1-p} = \frac{\text{probability of presence of characteristic}}{\text{probability of absence of characteristic}}$$

In logistic regression, the dependent variable is a logit, which is a log of odds, $\text{logit}(p) = \ln\left(\frac{p}{1-p}\right)$ so, the required probability is

$$p = \frac{e^{\text{logit}(p)}}{1 + e^{\text{logit}(p)}}$$

Findings

Descriptive Statistical Result

Credit Access

Table 1: Do you have credit access?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	105	28.2	28.3	28.3
	Yes	266	71.5	71.7	100.0
	Total	371	99.7	100.0	
Missing	System	1	3		
Total		372	100.0		

Source: Survey data, 2020.

Figure 1: Credit access.

As indicated in table 1. From the total farmhouse hold heads, of 370 respondents 266 (71%) of them have credit access. And 105 respondents (28.2%) respondents have not received credit access at all. Agricultural credit has played a great role in agricultural intensification. As discussed above rural farm households need credit access. Because shortage of financial problem is the big challenge in the developing countries. to solve such difficulties government, give more attention to the distribution of access credit. As we see from the result most of the sampled household heads get credit access to pursues agricultural inputs to increase the product and productivities of rural farm households. However, 105 respondents (28.2) have not received credit access as we have to get data qualitatively, the main problem for not receiving credit access is it is because the principle of distributing agricultural credit farmers should pay at hand. And lack of transportation has also been a big problem for these farmers not to receive credit access. On the other hand, there is a problem of re-payment on the side of rural farmers.

Table 2: Credit access and distance from the town

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Wargiba	153	41.1	41.2	41.2
	Kara Adishu	218	58.6	58.8	100.0
	Total	371	99.7	100.0	
Missing	System	1	3		
Total		372	100.0		

Source: Survey data, 2020.

Figure 2: Credit access and distance from the town

Table 2 showed that from the total farm households, of 153 sampled household heads in Wargiba (one tabiya) from the study area 59% of them received credit access. and from 218 respondents in Kara (the second study area) only 41% of them received credit access. this indicates that most respondents that received credit access are from Wargiba. By implication proximity matters for access to credit because 59% of respondents who are found far from the small town have not received credit access. because The distance of the household from the nearby town has been found that it varies based on the resident place it is. Hence, in which Wargiba has found at an average of about 12Km and Kara has found at an average of about 30 Km from the small town. As indicated in table 2. The proximity advantage is varies depending on the distance of the rural areas from the small town. For instance, Wargiba is the nearest to the small town relatively from Kara. The result shows that in Wargiba 59% received credit access Whereas, in Kara 41% of the respondents have received credit access. However, even from the near areas, some farmers didn't receive credit access this may be due to the difference of individual attributes. Because some farmers didn't use the opportunities of the small town.

Table 3: Gender and Credit access

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	162	54.5	55.7	55.7
	Male	209	45.2	45.3	45.5
	Total	371	99.7	100.0	100
Missing	System	1	3		
Total		372	100.0		

Source: Survey data, 2020.

As reported in table 3, the result of credit access and gender male head household were received credit access more than the female household heads in the study area. It indicates that female household heads didn't take or receive credit for the agricultural input and different agricultural technologies for their production and productivities. Besides, FHH, are mostly does not adopt technological inputs. FHH in rural areas face money problems especially they didn't get and update themselves with the new technologies and they have an information problem. At any time for the improvement of livelihood diversification, policymakers should consider the availability of credit access (Science et al., 2014). The result showed that from the total female respondents only 45% of them are received credit access. whereas, meal headed household of the total respondents 55% of them are received credit access. This outcome is consistent with the findings of (Alobo Loison, 2019a). However, it contradicts the findings of (Naybor et al., 2016). Data obtained from the qualitatively. The reason why female-headed households are not a risk-taker in adopting agricultural credit is that they fear the repayment of the loan because of this reason they need to take a small amount of money or they didn't want to take any credit at all then this makes them weak in their participation both on-farming and non-farming economic activities and out of the farm (Asfaw et al., 2017; Kassie et al., 2017; Moss et al., 2020).

Logistic Regression Model Result and Discussion

Agricultural Credit Access and Demographic Factors

Table 4: Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	35.745	4	.000
	Block	35.745	4	.000
	Model	35.745	4	.000

Table 5: Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	402.554 ^a	.092	.133

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Table 6: Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1^a	Gender	1.340	.246	29.740	1	.000	3.819
	Age	.588	.213	7.653	1	.006	1.518
	Education	1.132	.253	20.046	1	.000	3.102
	Family size	.488	.194	6.327	1	.012	1.630
	Constant	.482	.231	4.355	1	.037	1.620

a. Variable(s) entered on step 1: Gender, Age, Education, Family size. Source: Mode estimation based on Survey data, 2020.

The model chi-square is 35.745 and it is the significance (35.745), summery log-likelihood, 402.554^a and the Cox & Snell R square .092 the Nagelkerke R Square 133. The significance levels; ($P < .01$). The demographic factors; gender, age, education, and family size were statistically positive and significant effect on access to agricultural credit with ($p < .037$). by implication meal household (MHH) is highly influenced for access to agricultural credit than female household heads (FHH). Gender has a coefficient of 1.340 and ($p = .000$) this implies that being an MHH is 3.819 times important for receiving agricultural credit.

Education has a significant effect on credit access ($P = .000$) this indicates that when a household head increases its indication level by one year it is 3.102 times important for increasing credit access. similarly, a one-year increase in farming expertise or increasing age of household heads is 1.518 times important in credit access. Additionally, family size ($p < .012$) if increased by one-member household heads important will 1.630 times important in increasing agricultural credit. The overall result tells us the independent variables (demographic factors) have a great role in increasing agricultural credit access example, FHH mostly does not adopt agricultural technologies. At any time for the improvement of livelihood diversification, policymakers should consider the availability of credit access (Science et al., 2014). The educational level of the rural household farmers increases access to credit. Because according to human capital theory developed and educated human capital is pre-request for economic development.

Education level increases farmers' technical knowledge, their farming skill, a better understanding of agricultural technology, and greater know-how about credit access than their counterparts (E. Saqib et al., 2018). Our finding showed that age (farming experience) and credit access have a positive and significant effect on increasing credit access. More expericed farmers have an opportunity to create a relationship with the lenders than new or their counterparts. This finding is consistence with the study of (Oneto et al., 2010; Ray, 2020). Our result indicated that family size and credit access have a positive and statistically significant effect in increasing the agricultural access credit of the households. (E. Saqib et al., 2018; Oneto et al., 2010).

Credit access and off/non-Farm participation**Table 7:** Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	287.290 ^a	.354	504

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Table 8: Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	91.868	8	.000

Table 9: Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp (B)
Step 1 ^a						
Gender	-2.202	.511	18.569	1	.000	111
Age	3.406	.520	42.861	1	.000	30.145
Education	1.956	.431	20.573	1	.000	7.070
Family size	.575	.426	1.817	1	.178	1.777
credit access	-1.816	.405	20.097	1	.000	.163
road access	1.315	.508	6.698	1	.010	3.726
Distance from the town	.096	.388	.061	1	.806	1.100
Constant	-1.908	.978	3.809	1	.051	.148

Variable (s) entered on step 1: Gender, Age, Education, Family size, credit access, access to road, distance from the town.

Credit Access

More Secure for Agricultural Intensification Rather than Diversification credit access has negatively and significantly correlated with the livelihood diversification of farm household heads. This indicated that credit access has generally increased access to agricultural input for promoting agricultural intensification rather than diversifying their livelihood out of on-farm this finding is similar to the study of (Alobo Loison, 2019b). FHH as we found the data qualitatively, women take a small amount of credit for fear of repayment. As the result, they have low benefits from agricultural loans for input and technology Furthermore, Agriculture intensification is not for diversification rather it is for specialization (Rashid et al., 2013). However, input use in sub-Saharan Africa is minimal use. (Shanka, 2020). This led smallholder farmers to subsistence farming. The result showed that agricultural intensification will increase farmers' income and this also helps farmers to participate in non-farm economic activities.

Conclusion

Agriculture development-led industrialization (ADLI) is a long-term strategy in which, at the early stages of development, the agriculture sector is expected to play a leading role in the growth of the economy of Ethiopia (Dube et al., 2019). At this stage, agriculture is considered to be the engine of growth to feed large proportions of the population and the major economic activities are related to agriculture which has a strong growth linkage with other sectors (Dr. Juliansyah Noor, 2019). Agriculture has been given an overriding and intentional focus by the government. This is because the agricultural sector is the source of livelihood for 85% of the population which includes the majority of the poor (Amdissa, 2006). The agriculture sector is the backbone of the Ethiopian economy. It is the leading sector that contributes to the Gross Domestic Product of the country. However, as farming in Ethiopia is precarious and usually, at the mercy of nature, it is invariably an arduous struggle for the smallholders to make ends meet (Baye, 2017). In Ethiopia, smallholder farmers face the challenge of access to agricultural credit. This also results in farmers not using agricultural inputs and not producing commercial crops as well. Smallholder farmers may usually produce subsistence crops with traditional resources which aggravated the rate of poverty in rural areas.

The government of Ethiopia should encourage cooperatives in rural areas and infrastructure challenges both physical and institutional problems to solve the problem of farmers in rural areas and enhance sustainable economic development. our finding indicating that the demographic characteristics are important factors rural smallholders' access to agricultural credit in Ethiopia. Gender, age, educational level, and family size have a significant effect on access to agricultural credit. The lesson of the finding is female-headed houses had not received agricultural credit access like the female-headed household. This problem should be solved by encouraging females to participate during taking a loan. And most of the respondents in the study area are illiterates and they have the problem of physical collateral for credit access.

Smallholder Farmers need more credit to purchase for agricultural technology. Therefore, there is a need for credit. On the other hand, Credit Access hurts non-farm economic activities rather it is more secure for agricultural intensification than non-farm diversification in the study area. This indicated that credit access has generally increased access to agricultural input for promoting agricultural intensification rather than diversifying their livelihood out of on-farm this finding is similar to the study of (Alobo Loison, 2019b). As we found the data qualitatively, women take a small amount of credit for fear of repayment. As the result, they have low benefits from agricultural loans for input credit, probably Furthermore, intensification, especially in crop production, has been happening already, this is linked to increasing input use. Agriculture intensification is not for diversification rather it is for specialization (Rashid et al., 2013). However, input use in sub-Saharan Africa is minimal use (Shanka, 2020). This lead smallholder farmer to subsistence farming. policy makers should take in to account about the two basic economic activities.

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Institutional Review Board Statement: Ethical review and approval were waived for this study, due to that the research does not deal with vulnerable groups or sensitive issues.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy.

Conflicts of Interest: The authors declare no conflict of interest.

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