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EFFECT OF SMALLHOLDER FARMER'S UTILIZATION OF VARIOUS SOURCES OF FINANCE ON COFFEE VALUE CHAIN PERFORMANCE: Evidence from Ethiopia.

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Evidence from Ethiopia

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Abstract

Coffee, Ethiopia's number one source of export revenue, is the backbone of the country's economy. It generates the largest percentage of Ethiopian foreign exchange earnings and provides livelihoods for more than 15 million Ethiopian smallholder farmers. Smallholder farmers produce more than 90% of Ethiopia's coffee production. Beside the high degree of government intervention, the Ethiopian rural financial market is characterized as fragmented and coexistence of formal, semi-formal, and informal lenders. In this context, this research aimed to investigate the availability and effect of various sources of finance for smallholder farmers on coffee value chain performance. The analysis suggests that, semi-formal sources in general and saving and credit cooperatives in particular appear to be a major source of financing for smallholder farmers in the study area. The probability of farmers choosing formal sources of finance increases if the borrower exhibit higher level of education and bigger economically active family size while the bigger the coffee farm size the higher the probability of the farmer choosing a semiformal source of finance. Likewise, farmers with larger household size, adequate household labour supported by an active involvement in agricultural extension programs are found to be more likely to commercialize much of their produce via the Ethiopian coffee supply chain, whereas farmers far from central market and semiformal financial institutions have a lower probability of commercializing more of their produce through the supply chain. This study also shows that farmers who prefer to choose formal sources of finance were more likely to commercialize their produce through the supply chain than those smallholder farmers who prefers to access from semiformal and informal sources of finance.

Keywords:

Smallholder, Farmers, Coffee, Financial sector, Credit choice, Commercialization, Ethiopia.

Management Summary

Introduction

Smallholder farmers occupy an increasingly important segment of the global agricultural value chain. Apparently, smallholder production, which generally occurs on small plots of land, is characterized by little access to finance. Smallholder farmer access to finance can serve as a critical catalyst for economic growth and poverty alleviation. Yet local bank lending in developing countries, which should be a main source for smallholder financial access meets only little share of overall demand. In Ethiopia, despite the country's claim as Africa's largest coffee industry and source of some of the world's finest coffee, the country's smallholder coffee farmers often cannot access financing to grow their businesses and increase production.

Objective

This research was mainly aimed to investigate the availability and effect of various sources of finance for smallholder farmers on coffee value chain performance. Specifically, the research explore the availability of the various sources of finance for smallholder coffee farmers by structuring as formal, semiformal and informal sources. Further the research inquires the determinants of preferred credit choice from formal, semiformal and informal sources. Finally, the research examined the effect of smallholders farmers credit choice on their performance in the Ethiopian coffee supply chain.

Material and Methods

The survey was carried out in Ethiopia, *Mana* district, which is one of the coffee growing districts in Jimma zone located 355 km southwest of the capital city, Addis Ababa. Data was collected from a sample smallholder coffee farmers through a structured questionnaire. The research starts with exploring the various sources of finance available for the smallholder farmers by structuring them as formal, semiformal, and informal sources. Further, a multinomial logistic regression was employed to examine the determinants of smallholder farmer preferred credit choice from formal, semiformal and informal sources. Finally, the extent of smallholder farmers coffee commercialization via the Ethiopian coffee supply chain and its determinants were scrutinized by applying a two–limit Tobit regression model.

Results

This study shows that there is a coexistence of formal, semiformal and informal sources of finance in the study area. Overall, semi-formal sources in general and saving and credit cooperatives in particular appear to be a major source of financing for smallholder farmers in the study area. Furthermore, the study suggests that the probability of choosing formal sources increases if the borrower exhibit higher level of education and bigger economically active family size while a larger coffee farm size increases the probability of the farmer using a semiformal source of finance. Farmers with a large family size, adequate family labour supported by an active participation in

agricultural extension service are found to be more likely to commercialize much of their produce via the supply chain, whereas farmers far away from the central market and financial institutions shows a lower probability of commercializing more of their produce through the supply chain. Beside the positive association between access to finance and extent of commercialization estimates also shows that relative to formal sources of finance farmers who choose informal and semiformal sources are less likely to commercialize their products via the supply chain. The table below summarizes the main results of this study.

Table 1. Current demand and supply from formal, semiformal and informal sources of finance

	Formal	Semiformal	Informal
Farmers current credit access	3%	58%	39%
Farmers credit preference	16%	39%	45%

Table 2. Determinants of preferred credit choice and extent of commercialization

Variables	Credit choice [1]		Commercialization
	Formal	Semi-formal	
Age	Negative	Positive	Not significant
Female	Not significant	Not significant	Not significant
Married	Negative	Not significant	Not significant
Experience in agriculture	Negative	Not significant	Positive
Total Family size	Negative	Not significant	Positive
Adequate family labour	Positive	Not significant	Positive
Distance from the central market	Not significant	Negative	Negative
Agricultural Extension service	-	-	Positive
Membership in cooperatives	Negative	Not significant	Positive
Total coffee production	-	-	Not significant
Distance from semi-formal institutions	Not significant	Not significant	Negative
Farmers who prefer semiformal source	-	-	Negative
Farmers who prefer informal source	-	-	Negative
Inactive house hold members	Not significant	Not significant	-
Land size	Not significant	Positive	-
Livestock ownership	Not significant	Not significant	-
Distance from local market	Not significant	Not significant	-
Educated	Positive	Not significant	-
Muslim	Negative	Not significant	-

[1] the model was designed in such a way that informal source as the referent group and therefore for each predictor variables likelihood of smallholder farmer choice of formal and/or semiformal sources were made relative to informal sources.

– Variable not included

Acronyms

NGO	Non-Governmental Organization
ICO	International Coffee Organization
FMSC	Farmers multipurpose service cooperatives
FBO	Farmer Based Organization
ITC	International Trade Centre
MFI	Micro Finance Institutions
ROSCA	Rotated Saving And Credit Association
SPSS	Statistical Package For Social Sciences
Ha	Hectare
USAID	United States Agency for International Development
IFAD	International Fund for Agricultural Development

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1. INTRODUCTION

1.1. Background

Vast array of literature shows that the structure of the financial system in developing countries is considerably different from developed countries (Agénor and Montiel, 2008). Financial markets in developing countries are often described as fragmented in which different groups of borrowers are served by different lending intermediaries according to the characteristics of the borrowers, the lenders and the activities financed (Pham and Lensink, 2007, Conning and Udry, 2007, Onumah and De-Graft, 2011). In this combination of limited financial access and choice, firms in the same market uses considerably different financial instruments that differ in terms of interest rate charges, type and quantity of collateral required, and resources spent on monitoring and enforcement (Conning and Udry, 2007, Banerjee, 2001). Potential borrowers may even find themselves excluded from obtaining access to certain credit, or restricted to smaller loans than they might have optimally preferred (Atieno, 2001, Conning and Udry, 2007).

Smallholder farmers, who tend to be perceived as highly risky, are often excluded or rationed from formal credit market (Bastin and Matteucci, 2007, Conning and Udry, 2007). Consequently, alternative credit programs aimed at improving rural households' access to semi-formal credit have been developed in the form of microfinance institutions (Amha, 2010), credit cooperatives and poverty alleviation programmes (Pham and Lensink, 2007). Moreover, the scenario also leads smallholders to adjust their credit requirement by turning to substitute, often informal sources, which is more expensive financing sources (Bastin and Matteucci, 2007) This leads to a situation where smallholder farmers in developing countries obtain credit from a wide array of financial service providers including, banks, microfinance institutions, credit cooperatives and they might also borrow informally from relatives, friends, Moneylenders, shopkeepers and through ROSCA.

1.2. Statement of the problem

Ethiopia, Africa's second most populous country is among the fastest growing economy in the world in the last few years, peaking at 11.4 per cent in 2010/11 (Crentsil and Boansi, 2013). The economy is largely based on agriculture which accounts for 41% percent of the country's economy (Yehuala, 2008). The country, which is a birthplace of coffee and home to some of the premium coffees in the world, is currently the sixth largest producer and a top African exporter of coffee (Petit, 2007, Mehare and Edriss, 2013). Coffee generates the largest percentage of Ethiopian foreign exchange earnings and provides livelihoods for more than 15 million Ethiopian smallholder farmers (Coulter and Abena, 2010, Bastin and Matteucci, 2007). Despite the limited effort made, the country has not yet fully exploited its position as the producer of some of the best coffees in the world (Petit, 2007). Ethiopian coffee supply chain involves a number of chain participants including smallholder coffee

farmers, state farms, primary collectors, processors, cooperatives, unions, exporters and various government institutions (Petit, 2007). However, the coffee value-chain stakeholders, particularly smallholder farmers, lack access to finance for improving their produce.

As in many countries in Sub-Saharan Africa, smallholder farmers in Ethiopia are located in dispersed areas, demand relatively small amount of loans and savings accounts with a little acceptable collateral due to either lack of assets or unclear property rights (Amha, 2010). As a result credit to smallholder farmers in Ethiopia is characterized by high lending costs and high demand, resulting in relatively high interest rates being charged to borrowers. Despite, the challenge of delivering financial services to the smallholder farmers in Ethiopia, particularly in remote areas, financial services have been executed through microfinance institutions, savings and credit cooperatives and non-governmental organizations (Amha, 2010). Moreover, the changed emphasis of governments and donors on increasing agricultural production, mainly after the recent worldwide escalation in prices of agricultural products, has also put agricultural development and rural finance back in the attention of the development programme (Ton et al., 2014, Onumah et al., 2007). As a result, both macro and micro level strategies and development programmes are giving outstanding emphasis to the provision of sustainable finance to smallholder farmers in Ethiopia (Amha, 2010).

Past research findings suggests variety of factors that determines access to financial resources by smallholder farmers in developing countries. The need for credit, perception on lending procedures and loan repayment, distance between lender and borrower, attitude towards risk, and total value of assets owned are traced as factors that contributed significantly to access to credit (Khoi et al., 2013). Pham and Lensink (2007) also suggest that capability of providing collateral, gender, level of incomes, purposes of the lone determines the participation of borrowers in formal, semiformal and informal source of finance. In Ethiopia, few studies were conducted to see the financial service available for smallholder farmers. Most of the studies are carried out focusing only a limited source of finance and/or sector. For instance Yehuala (2008), Brehanu and Fufa (2008) and Emana (2005) addresses focusing only on the formal, semiformal and informal sector respectively; whereas Aredo (1993) focuses on both Informal and Semi-Formal financial sectors. Furthermore, Amha (2010) recently observes the how of meeting the financial needs of smallholder farmers in Ethiopia. More specifically, Bastin and Matteucci (2007) survey the challenges and opportunities of financing coffee smallholder farmers in Ethiopia. Instead, this research focuses on the determinants of preferred credit choice of smallholder farmers from formal, semi-formal and informal sources.

A strategic prospect in increasing coffee exports lies in improving quality which mainly determines the price of coffee beans. In Ethiopia, the quality of a batch of coffee beans determines whether it must be sold at a local market price or exported at a standard commodity price or even at a much higher "specialty" price (ITC, 2011). In a coffee bean's entire supply chain from farming field to the

final drinking-cup, quality is predominantly made or otherwise lost at the farm level (ITC, 2011). Coffee from the different producing region has a certain taste characteristic and some of these coffee types, such as Yirgacheffe, Limu and Harar are internationally well known as world's unique and finest coffees (Petit, 2007). It is also important to note the fact that smallholder farmers produce more than 90% of Ethiopia's coffee which intern fundamentally determine the quality coffee beans in one or another way (ITC, 2011). From previous studies, interventions in the Ethiopian coffee sector, through financial support, show a significant positive impact on smallholders farmers and the coffee value chain. Producers were able to improve the quality of coffees beans produced, gained access to higher-value markets and earned substantially more income from their production (Dempsey, 2006). However, further investigation on the relative effect of the formal, semiformal and informal source of finance to smallholders' coffee farmers' performance in commercializing their produce through a better market access lucks a due attention.

1.3. Research objective

The objective of this study is to investigate the availability and effect of various sources of finance for smallholder farmers on coffee value chain performance.

Specific research objectives

- To investigate the sources of finance provided for the smallholder coffee farmers.
- To identify the determinants for smallholder coffee farmers choice from formal, semi-formal and informal sources of finance.
- To examine effects of finance to the smallholder farmer's performance on commercialization.

1.4. Organization of the study

The remainder of the study is organized into section two, three, four and five. Section two presents the literature review. Section three will present the material and methods while section 4 present the result of the study. Finally, discussion, conclusion and recommendations are made in Section 5.

2. LITERATURE REVIEW

2.1. Overview of structure of rural finance in developing countries

For decades the smallholder farmers in developing countries were essentially shut out of credit and financial services because of the fact that smallholders farmers did not meet the traditional criteria for borrowing (Diagne and Zeller, 2001). The rural financial markets are often described as fragmented in which different groups of borrowers are served by different lending intermediaries according to the characteristics of the borrowers, the lenders and the activities financed (Pham and Lensink, 2007, Conning and Udry, 2007, Onumah and De-Graft, 2011).

Table 2.1, Classifications of smallholder household finance in developing countries

	Author/s	Country	Year	Classification		
				Formal sources	Semi-formal source	Informal source
1.	(Khoi et al., 2013)	South Africa	2013	• Private banks • State banks • development banks	• Not mentioned at all	• Money lenders • Family and Friends
2.	(Pham and Lensink, 2008)	Vietnam	2008	• State banks • Joint-stock banks • Foreign branch banks • Joint venture banks	• Credit cooperatives, • Savings and credit • poverty and Job creation alleviation programmes	• Money lenders • Relatives • Friends and neighbours • ROSCA • input shopkeepers
3.	(Barslund and Tarp, 2008)	Vietnam	2008	• Unions Bank • Rural Development • Bank for the Poor	• Not mentioned at all	• Private lending • Friends Families • Relatives
4.	(Pham and Lensink, 2007)	Vietnam	2007	• Private commercial banks • State commercial banks	• Bank for the Poor • Credit cooperatives • poverty and Job creation alleviation programmes	• moneylenders • Relatives • ROSCAs • Relatives, Friends
5.	(Okurut, 2006)	South Africa	2006	• Commercial banks • Mortgage finance • Car loans	• Consumption credit	• Friends • Relatives
6.	(Kaino, 2005)	Myanmar	2005	• Agricultural bank • Cooperatives • Private	• Local NGO-microfinance • International NGO-microfinance	• Moneylenders • Contracts creditors • Relatives
7.	(Mohamed, 2003)	Zanzibar	2003	• Banks	• Microfinance * • NGOs	• Not mentioned
8	(Atieno, 2001)	Kenya	2001	• Bank • Own savings in bank, • Cooperatives	• intuitions that has the features of both formal and informal sectors	• ROSCA • Moneylenders • Relatives, Friends • supplier credit
9.	(Seibel and Kunkel, 1999)	Laos	1999	• State-owned banks • Private banks	• Donor projects, Women's Union, Credit Associations	• Relatives, Friends • Moneylender • ROSCAs

As it is shown in table 2.1. borrowers in the same market choose considerably different financial instruments that differ in terms of interest rate charges, type and quantity of collateral required, and resources spent on monitoring and enforcing (Conning and Udry, 2007, Banerjee, 2001). Formal financial service is typically available only to those with enough land or assets to post as collateral (Maitra et al., 2014, Conning and Udry, 2007, Bastin and Matteucci, 2007). This results in financial service exclusion of the majority of the rural population in most developing countries which restricts growth in agricultural production and the ability of poor farming households to escape poverty by diversifying into high value cash crops with high capital requirements (Atieno, 2001, Conning and Udry, 2007, Armendáriz and Morduch, 2010, Onumah and De-Graft, 2011).

The major challenge in development policy is to find a way for formal financial institutions to provide credit to meet agricultural needs of poor farmers. The underlying problem is the difficulty of selecting creditworthy borrowers and enforcing loan repayments among those smallholder farmers who are lacking asset collateral and associated with high transaction cost of landing (Amha, 2010). Consequently, as an alternative to the formal financing scheme, credit programs aimed at improving rural households' access to semi-formal credit have been developed (Pham and Lensink, 2007, Amha, 2010). Semi-formal sources includes governmental or non-governmental organisations meant to fill the gaps in credit delivery that are not addressed by formal and non-formal credit sources (Kaino, 2005, Mohamed, 2003). In addition, most of smallholders also adjust their credit requirement by turning to substitute, informal sources, which is more expensive financing sources (Atieno, 2001, Bastin and Matteucci, 2007). This leads to a situation where smallholders farmers in developing countries obtain credit from a wide array of financial service providers formally from private and state commercial bank, and semi-formally from microfinance institutions, credit cooperatives, poverty alleviation programmes and they might also borrow informally from relatives, friends, Moneylenders, shopkeepers and through ROSCA (Rotating Saving and Credit Association).

2.2. Rural Finance in Ethiopia

Like other developing countries, the Ethiopian rural financial market is also characterized as fragmented and having a high degree of government intervention. Furthermore, the market is characterized by the coexistence of formal, semi-formal, and informal lenders. The finance providers or lenders vary in the cost of screening, monitoring and contract enforcement. The formal financial providers in Ethiopia include government and private commercial banks; and rural banks (Yehuala, 2008, Amha, 2010). MFIs, savings and credit co-operatives Aredo (1993) farmers' cooperatives, local associations and non-governmental organizations operating at smallholder farmers levels Amha (2010) are categorized as semi-formal source of finance.

The informal finance providers are the moneylenders, relatives, , friends, traders and suppliers (Amha, 2010, Yehuala, 2008). Furthermore, Ethiopia has a strong tradition of informal, community-

based institutions, which are known as Iddir, and Iquib (Aredo, 1993). 'Iddir' is an indigenous institution in which members regularly contribute a common pool in cash or in kind, with a view to support needy members based on varying criteria for membership. 'Iquib' is a ROSCAs in which members contribute to a common pool on a regular basis and collect the money by secret ballot among them or some other arrangements as agreed up on (Aredo, 1993)

Table 2.2: Classifications of smallholder farmers finance in Ethiopia

	Author/s	Year	Classification		
			Formal Sources	Semi-Formal Source	Informal Source
1	(Amha, 2010)	2010	• Banks • MFIs* • Cooperatives.*	• ROSCA, • Iddir* • Mahiber*	• Moneylenders, Relatives & Friends • Traders & Suppliers
2	(Brehanu and Fufa, 2008)	2008	• Not Mentioned	• Cooperatives* • NGOs	• Not Mentioned
3	(Yehuala, 2008)	2008	• Banks • Development Bank, NGOs* • Cooperative • Microfinance	• Not Mentioned	• Relatives And Friends • Money Lenders • Iddir • Iqqub • Mahaber
4	(Bastin and Matteucci, 2007)	2007	• Commercial Banks • Rural Banks	• Microfinance Institutions	• Moneylenders • Friends & Relatives • Iquib • Idir
5	(Aredo, 1993)	1993	• Not Mentioned	• Savings And Credit Co-operatives	• Iqub • Iddir

* Different authors classify some of the sources differently. For instance (Amha, 2010) classify Iddir, Iqqub, Mahaber as semiformal whereas (Yehuala, 2008) classify them as informal source of finance.

2.3. Smallholder framer's access to credit and its determinants

Even though providing financial services to the smallholder farmers in Ethiopia, for the most part in remote areas, are very challenging, lessons and innovative practices on how to advance the provision of financial services in sustainable ways are emerging. Towards the end of the 1990s, new and innovative approaches for providing financial services to smallholder farmers have been put into practice by financial cooperatives, deposit-taking MFIs, banks and non-governmental organizations (Amha, 2010). In addition, particularly after the recent worldwide increase in prices of agricultural products and its resulting emphasis of governments and donors on increasing agricultural production, has also put agricultural development and rural finance back in the attention of the development agenda (Ton et al., 2014, Onumah et al., 2007). In line with this, in Ethiopia both macro and micro level strategies and development programmes are giving outstanding emphasis to the provision of sustainable finance to smallholder farmers (Amha, 2010).

Table 2.3: Determinants of access to credit in developing countries

	Author/S	Country	Year	Determinants of credit Access		
				Borrowers characteristics	Loan characteristics	Socio economic participation
	Smallholder farmers					
1	(Chauke et al., 2013)	South Africa	2013	• Need for credit (+) • Total value of assets (-) • Attitude towards risk (-)	• Repayment period (-) • Lending procedures (-)	• Extension package (+)
2	(Dzadze et al., 2012)	Ghana	2012	• Educational level (+) • Ownership of bank savings account (+)	• Availability of guarantor (+) • Default on previous lone (-) • Extension contract (+)	• Having extension contact (+) • Membership of farmer based organization (FBO) (+)
3	(Oyedele and Akintola, 2012)	Nigeria	2012	• Age (+) • Access to other credit (+)	• Financial contribution in his or her group (+)	• Access extension service (+) • Membership of registered farming group (+)
4	(Yehuala, 2008)	Ethiopia.	2008	• Size of farm land (+) • Livestock ownership (+) • Experience in credit use (+)	• Inflexible repayment period (+)	• Participation in extension package (+) • Membership of FMSC (+)
5	(Barslund and Tarp, 2008)	Vietnam	2008	• Married (+) • Farm size (+) • Education level (+)		• Distance from the market centre (-) • Community involvement (+)
	Rural household					
7	(Pham and Lensink, 2007)	Vietnam	2007	• Female (-) • Age (+) • Age squired (-)	• Provision of collateral (+) • Provision of guarantor (+) • Business purpose (+)	
8	(Campero and Kaiser, 2013)	Mexico	2006	• Lack of information (-) • High defaulting (-)	• High interest rates (-) • Inadequate credit supply (-)	
9	(Akoten et al., 2006)	Kenya	2006	• Education level (+) • Married (+) • Family size (-) • Age (-)		• Community involvement (+)
10	(Mohamed, 2003)	Zanzibar	2003	• Age (+) • Education (+) • Female (-)		• Awareness of credit availability(+)

+ Positively related - Negatively related

One of the key objectives of the development strategies and programmes of Ethiopia is to increase the agricultural production and insure food security. However, farmers have limited internal financial capacity to make farm related long term investments and procure additional farm input such as improved seeds, fertilizers and chemicals. Developing financial service such as credit savings, and money transfer to smallholder farmers has been identified as an important device capable of breaking the vicious circle of poverty and ensuring food security (Amha, 2010). Over the last decade, finance providers such as the deposit-taking microfinance institutions (MFIs) and financial cooperatives have been exerting commendable efforts in Ethiopia in the provision of financial services to smallholder farmers (Bastin and Matteucci, 2007). Despite of the continued hard work and effort of finance providers, governments, donors and other development partners to expand outreach in delivering financial services to smallholder farmers, there is still a huge unmet demand for such services(Bastin and Matteucci, 2007, Amha, 2010).

Several research studies have investigated the determinants of' demand for credit from different institutions in developing countries (See table 2.3) using multinomial models (for example; (Akoten et al., 2006, Pham and Lensink, 2007); (Pham and Lensink, 2007); (Yehuala, 2008); (Barslund and Tarp, 2008); (Dzadze et al., 2012) and (Chauke et al., 2013)). Pham and Lensink (2007), confirms that, in Vietnam the supply of credit from formal, semi-formal and informal sources depends on the possible profits that can be made from the use of the loans. Moreover, credit supply may also increase if borrowers provide collateral, a guarantor and if the credit is for business-related activities. For the case of Ghana Dzadze et al. (2012) found that access to formal credit is significantly related to farmer's educational level, extension contact, membership of Farmer Based Organization (FBO), and ownership of Bank savings account. Moreover, as it is shown in table 2.3 Chauke et al. (2013), Oyedele and Akintola (2012), Akoten et al. (2006), Mohamed (2003), Campero and Kaiser (2013) and Yehuala (2008) asses the determinants of access to finance from variety of sources in South Africa, Nigeria, Kenya, Zanzibar, Mexico and Ethiopia respectively.

2.4. Overview of the Ethiopian coffee supply chain

In a coffee entire supply chain from farming field on the way to the final drinking-cup, numerous market participants are involved (Petit, 2007). However, most of the coffee value-chain stakeholders, particularly smallholder farmers lack access to finance for improving their produce (Amha, 2010). It is recognized that intensifications in finance and investment are needed at all levels of the supply chain, while giving special interest in increasing the access to finance by those agricultural households and communities who are most vulnerable to food insecurity and poverty (Miller and Jones, 2010). As such a significant consideration should be given to the enhance smallholder farmers and small agribusinesses that have the most to gain or lose in today's rapidly changing agricultural and economic environment (Miller and Jones, 2010).

Contrarily, increasing finance and investment in a sustainable manner is not easy. Financing agriculture continues to be perceived as having high costs of operation, high risks and low returns on investment (Conning and Udry, 2007). Despite good intentions for directing credit to agriculture, the results of the agricultural lending programmes in developing countries usually have unsatisfactory results with low rates of repayment (Miller and Jones, 2010). The cost of directly lending to farmers, especially smaller ones, in a very remote rural areas with less-educated and low-income is in fact unattractive to most formal financial institutions (Amha, 2010). Microfinance institutions do reach some of these low-income households but at a high cost, with short-term loan products that are generally not able to address the full range of smallholder farmer's needs (Miller and Jones, 2010, Amha, 2010)

Agriculture has been changing rapidly from one of fragmented production and marketing relationships toward integrated market systems, or chains. Driven by gains from economies of scale and globalization of the food chain, multinational agro-enterprises increasingly dominate the sector with more and more vertical and horizontal linkages and integration. In line with this recently creative forms of financings are being developed, and existing financial institutions have become more flexible and resourceful with the growth of microfinance, social investment, and other forms of non-conventional funding (Amha, 2010). These efforts are supported by donors who frequently offer loans or grants, guarantees, capacity building and other forms of assistance that can aid financial institutions in high risk, low collateral lending. With the extending concerns about poverty alleviation along with the growing food crisis and the realization of small farmers important contribution to global food security, it is anticipated that value chain development and finance will continue to change and progress (Miller and Jones, 2010).

Unlike conventional financing which relies heavily on the creditworthiness of the client and business, value chain financing focuses more on the payments to be received from activities, such as production and value-added transactions. This innovation allows for increased access to finance for those smallholder farmers without sufficient collateral, but with predictable flows of goods, and strong partners in the chain. According to Miller and Jones (2010) one of the most significant innovations in expanding agricultural finance to poorer farmers and agro-enterprise is the willingness of financial institutions to examine value chain relationships and make financing decisions based on third-party agreements rather than conventional collateral. Furthermore, this has led to third-party lending where banking institutions will provide loans to businesses higher in the chain – such as processors – knowing that the firm will lend to trusted suppliers. This reduces the due diligence and operational costs of lending on the part of the bank, while also mitigating their own risk. Moreover, the author also added the collateralization of agricultural outputs as another significant innovation in the value chain finance.

2.4.1. Coffee commercialization and the Ethiopian coffee supply chain

Smallholder commercialization generally means the situation where smallholder farmers have greater engagement with markets, either for inputs, outputs, or both (Poole et al., 2013). In most literature, a farm household is assumed to be commercialized if it is producing a significant amount of cash commodities, allocating a proportion of its resources to marketable commodities, or selling a considerable proportion of its agricultural outputs. As such, smallholder commercialization could be seen as the strength of the linkage between farm households and markets at a given point in time. This household-to-market linkage could relate to output or input markets either in selling, buying or both (Jaleta et al., 2009) A key premise of commercialization as a development strategy is that markets provide increased incomes to households who are able to maximize the returns to land and labour through market opportunities. This as a result will give a due opportunity in using earned income for household consumption in ways that are more efficient than subsistence production.

Various authors have used different yardsticks in measuring the level of agricultural commercialization at household level. Most of the existing literature measures smallholder commercialization based on the analysis of output market participation (Jaleta et al., 2009, Govereh et al., 1999, Braun and Kennedy, 1994). Market participation in agricultural production is measured by the proportion of agricultural produce sold. Braun and Kennedy (1994) Measures commercialization index as

$$Commercialization\ of\ agriculture\ (\ output\ side) = \frac{Value\ of\ agricultural\ sales\ in\ markets}{agricultural\ product\ value}$$

Jaleta et al. (2009) and Govereh et al. (1999) measure as *sales-to -output ratio and household* commercialization *index respectively (HCI)*

$$HCI = Sales\ to\ Output\ Ratio = \frac{Gross\ value\ of\ all\ agricultural\ sales}{Gross\ value\ of\ all\ agricultural\ production}$$

In a broader sense, one could also see smallholder farmer's commercialization as a pathway to the overall coffee supply chain structural transformation in which larger proportions of coffee produce will be supplied through the Ethiopian coffee supply chain via local collectors and cooperatives. The choice of targeting either domestic or export markets in the process of smallholder commercialization is basically linked to the nature of the product demand and need for foreign exchange. Apart from the international export markets for coffee, there is a considerable potential demand in the domestic markets of Ethiopia. The country is one of the few producing countries with a strong coffee-drinking culture. The ICO estimated for Ethiopians local coffee consumption as more than 40 per cent of production (ICO., 2012, USAID, 2010). Though countries like Ethiopia and Brazil with large population size, domestic markets is also a major market target due to higher domestic

demand for coffee produce, however, coffee as a main product for foreign exchange is usually needed for the export market.

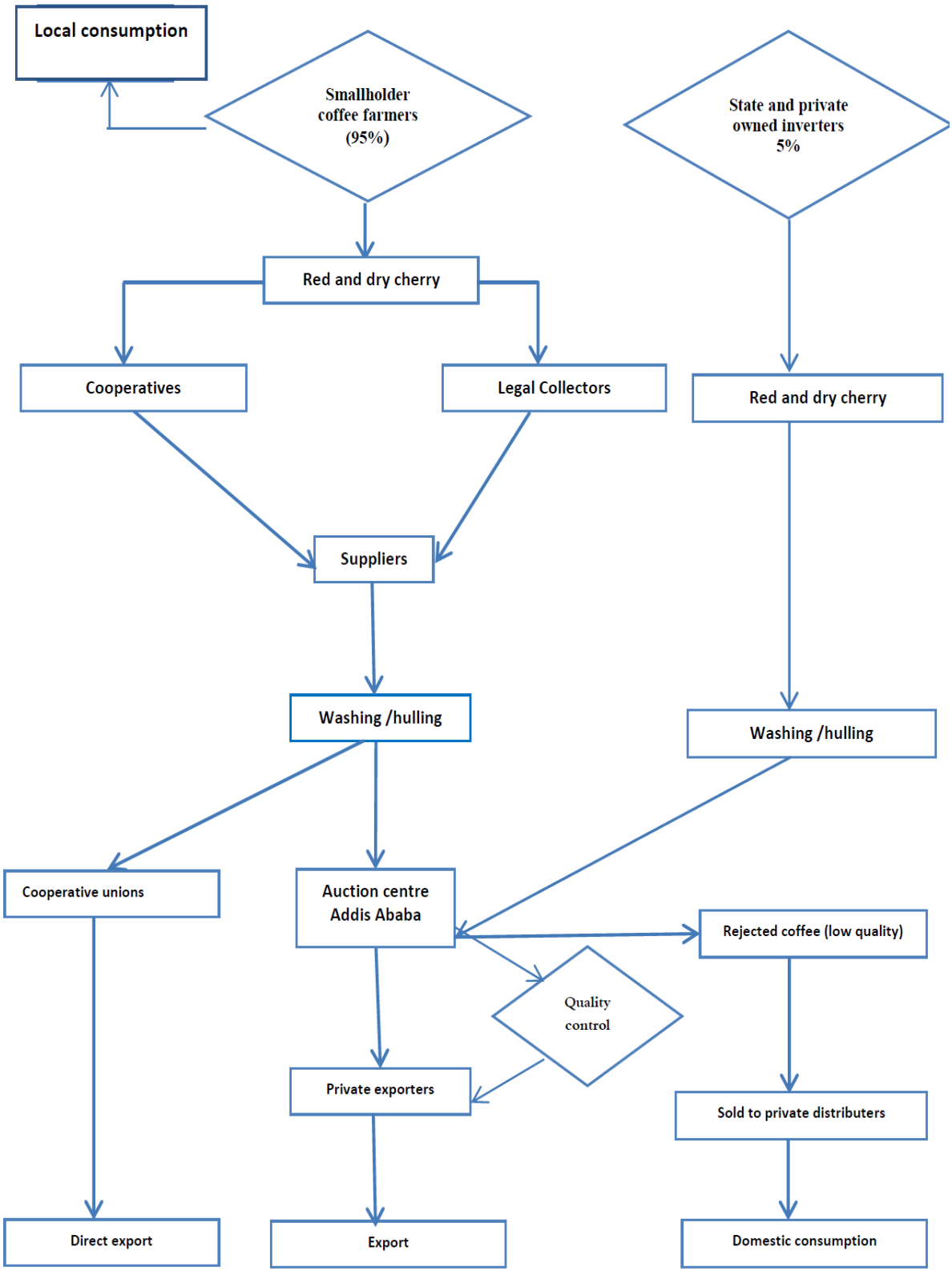

Fig 2.1 Ethiopian Domestic Coffee Supply Chain

In targeting the export market for the process of smallholder commercialization, the issue of product quality standards, timely and regular supply, and volume need to be given emphasis in enabling the small-scale farmers to be part of the game (Jaleta et al., 2009). Despite the national interest in foreign currency earnings from export markets, such a regulatory issue put smallholders at a higher income risk which might have an adverse consequence on the overall commercialization process. Such constraints can be overcome by vertically coordinated supply value chains that use smallholders as out-growers (Dolan and Humphrey, 2000). In line with this, all Ethiopian coffee should pass through auction centres. However, since 2001 reform, cooperatives have been allowed to by-pass coffee auctions, and able to directly export coffee produce (Jaleta et al., 2009). Alternatively cooperatives and collectors are used to directly connect the smallholders to commercialize coffee produce via the Ethiopian coffee value chain and reach at the Ethiopian commodity exchange. Primary coffee collectors (also called _'*sebsabies*') are locally licensed coffee traders that purchases coffee from smallholder farmers. They play an essential role of bringing coffee to supply chain from very remote areas to the market. They have no warehouses of their own and therefore immediately transfer the coffee to wholesalers (also called _'*akrabies*').

Farmer cooperatives made up of different local peasant associations play an important role in organizing farmers. Many cooperatives own washing stations and warehouses. From 2001, they obtained a concession to bypass the auction and export coffee directly to overseas buyers. Increasing farmer incomes through the development of smallholder cooperatives linked to markets is the primary objective of Agricultural Cooperatives in Ethiopia (Jaleta et al., 2009).

Fig 2.2 Smallholder farmer cooperatives coffee drying process

2.4.2. Determinants of smallholders farmers commercialization

While there has been significant research on credit constraints in developing countries, there is surprisingly little information pertaining to the actual impacts of credit constraints on smallholder. Few previous studies in developing countries were done to see the impact of rural credit on the smallholder's farmer's productivity, household wellbeing's and commercialization. In India and China where the largest farm-household populations in the world existed among the many other factors that affect farm livelihoods, access to credit has been identified as a significant barrier preventing the escape from poverty (Kumar, 2013).

Table 2.4 Determinants of smallholders farmers commercialization.

	Author/s	Country	Year	Significant Variables
1	(Tufa et al., 2014)	Ethiopia	2014	• Gender/ male (+) • Farm size (+) • Distance from the market (-)
2	(Agwu et al., 2013)	Nigeria	2013	• Farming experience (+) • Farm size (+) • Access to credits (+) • Distance to market (-) • Household size (-)
3	(Kefyalew, 2013)	Ethiopia	2013	• Access to finance (+) • Number of active family labour (+) • Land size (+) • Number of oxen (+) • Distance to extension(-) • Distance to market (-)
4	(Martey et al., 2012)	Ghana	2012	• Age of household head (+) • Years of education (+) • Extension access (+) • Farm size (+) • Access to credit(+) • Off-farm income (-)
5	(Gebremedhin and Jaleta, 2010)	Ethiopia	2010	• Total crop production (+) • Distance from the market (-) • Availability of family labour (+)
6	(Jaleta et al., 2009)	Ethiopia	2009	• Education level(+) • Oxen owned (+) • Distance from the market (-)

+ Positively related – Negatively related

Okurut (2006), Suggests the importance of marketing and rural credit systems in India in order to link the farmers with the market and help the farmer and develop the agricultural sector. As it is explained above rural credit services can be given through different sources with varying interest rate, repayment structure, collateral requirements and other related criteria. Saeed (2013) remarked that if it is provided at lower cost micro finance is significant way to reduce level of smallholder farmer's poverty in Pakistan. When farmers get money with the help of microfinance at lower cost it will improve their living standards as well as it will add significant positive results to economy.

In rural Nigeria, Agwu et al. (2013) reported that credits by the farmers positively influences farmer's orientation towards commercialization. They argued that lack of credits as one of the major constraints influencing against agricultural productivity among farmers, particularly smallholder farmers. (Martey et al., 2012, Lerman, 2004) also claim that Credits are expected to enhance farmer skills and knowledge, link farmers with modern technology through the purchase of inputs such as materials, fertilizer and crop protection, and thus, leading to increase agricultural productivity, induce market orientation and participation and thus greater commercialization. Beside other factors Previous studies in Ethiopia also show that access to credit, number of livestock owned and number of active family labour significantly determine the level of smallholders' extent of commercialization. Moreover, a details list of the significant factors determining the smallholders extent of commercialization are presented as followed in table 2,4.

3. MATERIALS AND METHODS

This section present the methodology used to achieve the objective of the study. It encompasses description of the study area, source and method of data collection, sample description and variable specification. Moreover, methods of data analysis and description of the empirical model for data analysis is also presented.

3.1. Study area

The survey was carried out in Oromia Regional State, Jimma zone, Mana district located 355 km southwest of Addis Ababa. Oromia is the largest regional state, both in terms of territory and population size. As shown in figure 3.1 below, the population of interest, Jimma zone, is divided in to geographically distinct administrative districts which are commonly known as *Wereda.* [1] Furthermore, each district is also sub-divided in to smaller villages called *kebele.* [2] Agriculture, more specifically coffee, constitutes the foundation of the smallholders income and it is characterized by fragmented and subsistence farming. Large majority, 95 percent, of the coffee produce comes from smallholders (USAID, 2010). Eighty-five percent of the coffee produced in the region is marketed raw: sun dried (or unwashed) coffee (Bastin and Matteucci, 2007).

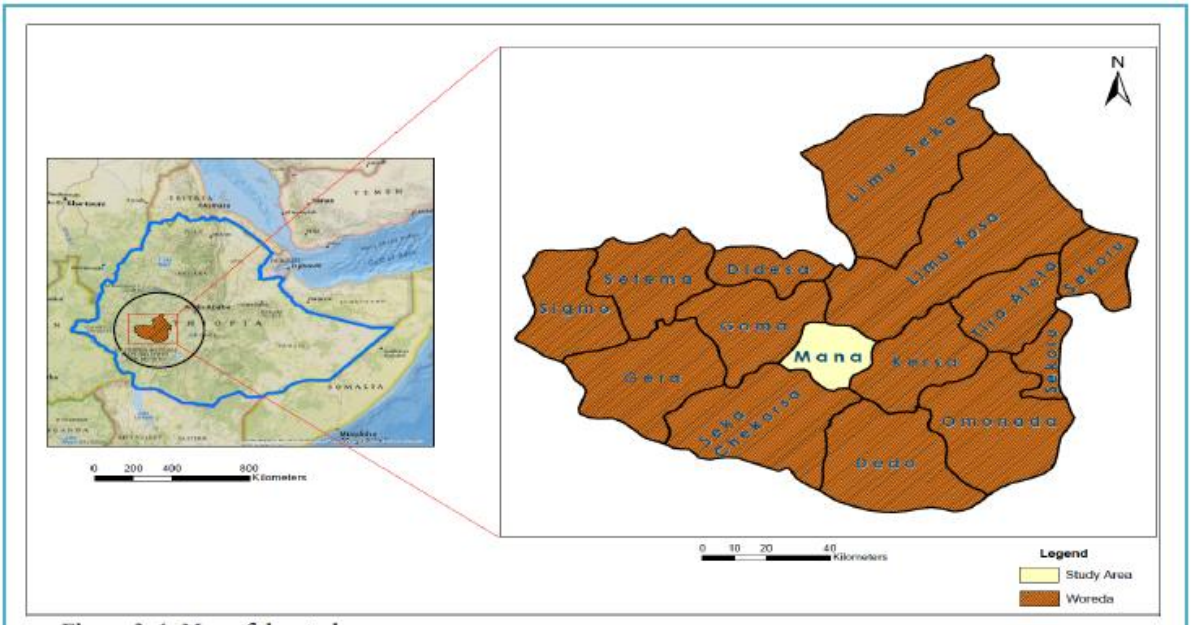

Figure 3. 1, Map of the study area

The data were specifically collected in the centre of Jimma zone, Mana district. To make the sample size and procedure representative three villages (so called kebelies) were randomly selected. A typical farmer in the sample area was about 46 years old, had an average coffee farm size of 0.57 Ha, total

[1] **Wereda**: administrative district [2] **Kebele**: peasant association (PA's)

family size of 5 which is a good representative of the whole Oromia region's smallholder farmer which appears to be 45 years old with a coffee farm size of 0.5 ha and total family size of 6.

3.2. Source and method of data collection

The data for this thesis is obtained from both primary and secondary sources. The primary data was collected from a sample of smallholder farmers through a structured questionnaire. The survey was conducted in *Mana Wereda* (district) one of the districts with a coffee growing smallholder farmer's where three different *kebelies (villages)* namely Korie, Haro and Dawa were randomly selected. A sample of 200 smallholder coffee farmers was taken. Of the total sample 78, 47 and 67 respondents were proportionally allocated for Korie, Haro and Dawa villages respectively. The analysis in this survey was based upon 193 valid smallholder farmers data where 7 questionnaires were discarded because of incomplete information.

Table 3.1 Sample selected from each village

Kebele (village)	**Population**	**Proportion (%)**	**Proportional sample**	**Valid Response**
Kore	4067	41 %	83	78
Haro	2493	25%	49	47
Dawa	3433	34%	68	67
Total	**9993**	**100%**	**200**	**193**

Structured questionnaire was prepared to collect quantitative data for the study. The questionnaire is prepared first in English language then translated in to the local language, Oromiffa, finally back translated to English to ensure the consistency of items. The questionnaire was pre-tested to evaluate consistency, clarity and to avoid duplication and to estimate the time requirement during data collection. Based on the feedback from the pre-test minor adjustments were made to the final version of the questionnaire. Three agricultural college graduates, who are native to the thesis areas, know the language and have a prior data collection experience were hired as numerators. These enumerators collected the data with a close supervision of the researcher. Before the fieldwork appropriate training including field practice was given to the enumerators to develop their understanding regarding the objectives of the study, the content of the questionnaire, how to approach the respondents and conduct the data collection.

3.3. Sample Description

The survey includes information on households demographic characteristics such as; gender, age, education, religious affiliations and marital status; socio economic participation like membership in farmer cooperatives, participation in agricultural extension program, and socioeconomic holdings like the total cattle belongings, total farmland size (both owned and rented). As it is shown in table 3.3 and 3.4 a typical farmer in the sample was about 46 years old, had an average coffee farm size 0.57 Ha, total family size of 6 with a 22% dependency ratio and about 17 years of coffee farming

experience. Evidence from the survey also showed that from the sample farmers interviewed 75. %, 71%, 72% and 92% were male, married, illiterate and Muslim respectively, whilst 84.9% of them were members in farmer's cooperatives.

Table 3.2. Socioeconomic and demographic characteristics (continuous variables)

Continuous variables	N	Minimum	Maximum	Mean	Std. Deviation
Age	193	25	70	45.96	10.37
Experience in agricultural	193	3	44	22.73	9.23
Active labour	193	0	10	4.34	1.64
Total family	193	1	12	5.80	1.88
Dependency ratio	193	0	0.63	0.22	0.17
Adequate household labour	193	0	1	0.85	0.35
Farm land	193	0.25	1.25	0.57	0.26
Livestock owned	193	0	15	6.30	4.35
Distance from local market	193	1	22	4.92	2.37
Distance from central market	193	1	12	6.35	2.33
Distance from financial institution	193	1	12	6.27	2.36
Valid N (listwise)	193				

With respect to the preference of smallholders towards credit 46% of the respondents prefer to have credit from informal sources, while 39 % and 16% of the respondents prefers credit from semiformal and formal sources of credit respectively.

Table 3.3. Socioeconomic and demographic characteristics of respondents (categorical variable)

Variables	Response Categories	N	%
Gender	Female	48	24.90%
	Male	145	75.10%
Marital status	Married	137	71.00%
	Not married	56	29.00%
Educational status	Educated	55	28.50%
	Illiterate	138	71.50%
Religion status	Muslim	178	92.20%
	other	15	7.80%
Participation in agricultural extension	Yes	146	75.60%
	No	47	24.40%
Membership of Farmers cooperative	Yes	163	84.50%
	No	30	15.50%
Preferred credit choice of smallholders	Formal Sources	30	15.50%
	Semi-Formal sources	75	38.90%
	Informal Sources	88	45.60%

3.4. Variable specification and method of data analysis

3.4.1. Typology of various sources of finance for smallholders

With respect to the first specific objective the study assesses and map the source of finance for smallholders from the various financial intermediaries ranging from the formal, semiformal and informal financial sources. The respondent's response articulates the proportion of the existing source of finance for smallholder farmer's from formal, semi-formal and informal sources. Furthermore, the purpose of the loan; requirement for collateral and guarantor are presented in detail.

3.4.2. Determinants of preferred choice of access to finance

With respect to the second objective the research applied a multinomial logit model to examine the determinants of the probability of the smallholder farmer's choosing formal, informal and semiformal credit. The multinomial logit model is used to examine unordered choice sets when data is individual specific (Field, 2009). The multinomial Logit model estimates k-1 models, where k is the number of levels of the outcome variable, in this research case 2 (3-1).

The preferred choice of credit by a smallholder farmers as a categorical dependent variable are assigned as Y with **"1"** represented **formal sources**, **"2" semi-formal sources** while **"3"** represented **informal sources**. The model is designed in such a way that informal sources as the referent group and therefore estimated likelihood of smallholders farmers choice for formal and semiformal sources of finance in relative to informal sources of finance. SPSS Version 20 was employed to run the model. The explanatory variables for this model includes smallholders personal characteristics such as age, gender, marital status, level of education and experience in agricultural; Socioeconomic belongings and participation, such as total family size both economically active and inactive, Coffee land size, livestock ownership, religion affiliation and membership to farmer cooperative. Furthermore distance from local market, central market, and financial institution are also included.

3.4.3. Determinants of smallholders commercialization

With respect to the determinants of commercialization, the dependant variable, the extent of coffee produced and commercialized through Ethiopian coffee supply chain via either the primary collectors or/and farmers cooperatives are calculated as a percentage of the total production produced by the smallholder farmers. In line with (Jaleta et al., 2009, Govereh et al., 1999, Braun and Kennedy, 1994) the extent of smallholders commercialization was measured as:

$$\text{Commercialization of Coffee} = \frac{\text{Total Coffee sold Via the supply cahin}}{\text{Total coffee produced}} \quad (1)$$

Where:

- Commercialization of coffee = extent of commercialization in percentage value ranging from 0 to 1.
- Total Coffee Sold via the supply chain (Hcr) = smallholders farmers total coffee produced and sold to the collectors and to cooperatives via the supply chain in hectare
- Total Coffee produced (Hcr) = smallholders farmers total coffee production in hectare.

In the descriptive summary table (table 3.2) we see that a 193 observations as a data set was used in the analysis with a mean and standard deviation of .42 and .25 respectively. These shows that an average smallholder farmer in the sample area commercializes 42 % of his/her produce through the Ethiopian coffee supply chain either via selling to collectors or/and cooperatives. The proportion of coffee produce sold via the supply chain as a dependant variable is represented **prop** while age, gender, marital status, experience in coffee agriculture, total family size, adequacy of the household labour, distance from financial institutions and market, total coffee produced, membership to cooperate and the choice of source of finance are predicting variables. The variable **choice** is the type of credit choice the smallholder farmers prefer and it is a categorical (nominal) variable that takes three values, formal source (**choice** = 1), semiformal source (**choice** = 2), and informal source (**choice** = 3).

Table 3.4. Smallholder farmers extent of commercialization

Variable	Obs	Mean	Std. Dev.	Min	Max
proportion	193	.42	.25	0	1

The dependant variable ranges from 0 (these farmers who produced coffee, but do not sell to the primary collectors or farmer cooperatives) to 1 (those who produced and sold the entire production either to the primary collector or/and the farmer cooperatives). Therefore, the value of this variable under this analysis scattered between *Zero* to *One.* When the dependent variable in a regression model is a proportion or a percentage, it can be tricky to decide on the appropriate way to model it. The first approach is *ordinary linear regression*. The big problem with *ordinary linear regression* is that the model can predict values that aren't possible–values below 0 or above 1 (Rosett and Nelson, 1975). If the data fall in the middle, linear section of the curve, this generally translates to all the data being between .2 and .8. If this holds, it does have a linear relationship and it won't get predicted values much beyond those values–certainly not beyond 0 or 1. A second approach is to treat the proportion as a binary response, then run a binary logit or probit regression. This will only work if the proportion can be supposed as the number of successes and the total number of trials. This did not hold. The third approach is to treat it the proportion as a censored continuous variable and run the model as a two-limit tobit model Long (1997). STATA was used in order to run this model.

3.5. Analytical Model

3.5.1. Multinomial logit model

In order to analyse the probability of smallholder farmer credit choice multinomial logit model was employed. Credit choice as a dependent variable is represented as"*y*". *It is* a categorical, unordered variable where the smallholder farmers are assumed to select only one alternative. Assume:

- y = 1 If the smallholder farmer choose formal sources
- y = 2 If the smallholder farmer choose semi-formal sources
- y = 3 If the smallholder farmer choose informal sources

The credit choices coded as *j* =1, 2, and 3 the numbers are only codes and their magnitude cannot be interpreted. The response from each of the smallholder farmer *i* is recorded on *j(3)* rows, where *j* is the number of alternatives. The dependent variable is:

$$y_j = \begin{cases} 1\ if\ y=j \\ 0=if \neq j \end{cases} \quad (2)$$

Therefore, $y_j = 1$ if the alternative *j* is the observed outcome and the remaining $y_k = 0$. For each observation only one of y_{i1}, y_{i2} or y_{i3} is a non-zero. The probability that a smallholder farmer *i* will select alternative source of finance j is given as:

$$P\text{ij} = \text{p(yi = j)} = \frac{\exp(x_i' \beta_j)}{1+\sum_{k=1}^{m} \exp(x_i' \beta_J)} \quad (3)$$

Where

- Y = the response variable, which takes integer values from 1 to *J*.
- P_{ij}= The probability that a smallholder farmer *i* will select alternative *j*
- j = number of categories of the nominal response (alternative source of finance where 1 = "formal source" 2 ="semiformal "and 3= "informal "source) and M= j-1

Since the smallholder famer is assumed to choose one of the alternative sources the probabilities for choosing each alternative (formal, semiformal and informal sources) is sum up to 1.

$$\text{p(yi = 1)} + \text{p(yi = 2)} + \text{p(yi = 3)} = \sum_{J=1}^{M} P_{ij} = 1 \quad (4)$$

Likewise, one set of coefficients needs to be normalized to zero to estimate the models (β) so there are (*j*-1) sets of coefficients estimated. The coefficients of other alternatives are interpreted in reference to the base outcome. Since these parameter estimates (β) are relative to the referent group, the standard interpretation of the multinomial Logit is that for a unit change in the predictor variable, the Logit of outcome j relative to the referent group is expected to change by its respective parameter estimate (which is in log-odds units) given the variables in the model are held constant.

Thus βi can be viewed as parameters of a binary logit model between alternative J' and alternative 1 (referent group). So a positive coefficient from multinomial legit means that as the predictor increases, it is more likely to choose alternative J than alternative 1. Putting it differently an increase in the positive or negative coefficient of the independent variable makes the selection of alternative *j* more or less likely respectively. In this research model *"informal source"* was used as a referent group and the coefficient interpretation of formal and semiformal source was made in comparison to informal sources.

3.5.2. Two limit Tobit model

In order to examine the determinants of smallholders extent of commercialization the research applied a two limit-tobit regression model. When the dependent variable to be modelled is limited in its range, using OLS may result in biased and inconsistent parameter estimates. The Tobit regression model Tobin (1958) is one of the methods that are used to overcome such problems. In this study, the value of the dependent variable is the proportion of coffee sold via supply chain computed by dividing the amount of coffee produce sold via the supply chain to the total amount coffee production by a smallholder that ranges between 0 and 1. Thus, a two-limit Tobit model is appropriate in such cases (Long, 1997, Rosett and Nelson, 1975). This is given as:

$$y_i^* = \beta' x_i + \varepsilon_i \quad (5)$$

where y_i^* is a vector of the latent variable that is not observed for values less than zero and greater than one, x_i represents vector of the independent variables, β is vector of the unknown parameters, ε_i is vector of the error terms that are distribute normally with mean 0 and variance σ^2 i = 1, 2, 3. . .*n* represents the number of observations. If y_i is the observed variable, representing the proportion of extent of commercialization, its value is censored from below at L = 0 and from above at U = 1. Thus,

$$y_i = \begin{cases} 0 \text{ if } y_i^* \leq L \\ y_i^* \text{ if } L \leq y_i^* \leq U \\ 1 \text{ if } y_i^* \geq U \end{cases} \quad (6)$$

The actual value of the dependant variable, extent of commercialization y_i^* is observed if the latent variable y_i^* is above zero and below one and zero and one will be observed for the censored observation from below and above respectively. Expected value of the latent variable y_i^* is given by:

$$E(y_i^*/x) = \beta' x \quad (7)$$

The change in probability of smallholders farmers extent of commercialization for a unit change in the explanatory variable is given by:

$$\frac{\partial E(y^*/x)}{\partial x_i} = \beta_i \quad (8)$$

4. RESULTS

4.1. Smallholder Farmers Source of Finance

Based on the theoretical framework the sources of finance were categorized as formal, semiformal and informal financial intermediaries. As it is shown in table 4.1 overall, formal credit sources makes up **3.63%** of total credit volume and **3.27%** of the loan contracts. Semi-formal sources appear to be a major source of financing for smallholder farmers with **73.54%** of the credit volume and **57.94%** of the loan contracts whereas the informal credit sources accounts for **22.83%** of the total credit volume and **38.79%** of the Loan contractual. Saving and credit cooperative, friends and family were found to be the three major sources of credit which accounts for **66.35%**, **7.38%** and **4.82%** of the total credit volume provided for the smallholder farmers respectively. The average loan size is smallest Ethiopian birr (350 ETB) by suppliers credit and largest (3305.5 ETB) at the savings and credit cooperatives. This strongly tells us that savings and credit cooperatives are most important source of credit in terms of both average loan size (3305.5 ETB) and percentage contribution to the total loan contracts made to **(51%)** smallholders in the survey area. Of all the credit sources, supplier credit and trader credits are the least important in terms of average loan size.

Table 4.1. Typology of smallholders credit sources by number of contracts and volume

Sources	Number of loan contract		Credit Volume		
	In number	In percent	Total	Mean	In Percent
FORMAL SOURCES	7	3.27	19700	2814.29***	3.63
Commercial Bank of Ethiopia.	2	0.93	6000	3000	1.10
Private commercial banks	5	2.34	13700	2740	2.52
SEMIFORMAL SOURCES	124	57.94	399350	3220.56***	73.54
Microfinance institutions	9	4.21	20350	2262.11	3.75
Savings & credit co-operatives	109	50.93	360300	3305.5	66.35
Farmers' cooperatives	6	2.80	18700	3116.67	3.44
INFORMAL SOURCES	83	38.79	123,979	1493.72***	22.83
Moneylenders	12	5.61	24770	2064.17	4.56
Family	26	12.15	26159	1006.12	4.82
suppliers credit	4	1.87	1400	350	0.26
Trader credit	3	1.40	1200	400	0.22
Friends	14	6.54	40100	2864.29	7.38
Iquib	17	7.94	26000	1529.41	4.79
Maheber	7	3.27	4350	621.43	0.80
TOTAL	214[3]	100	543 029	2537.50	100

As it is clearly shown in table 4.1; the groups of formal, informal and semiformal financial intermediaries seem to be attracted to some dominant credit providers in each group. This table

[3] Some smallholder farmers have more than one credit source.

shows that the formal financial sector primarily consists of the private commercial banks. Semi-formal sector dominantly consists of savings and credit cooperatives whereas the majority of the group of informal lenders consists of family and friends. It is important to remind the diversity within each financial sector and should be recognized that each of the above financial sources-defined as formal, semiformal and informal financial sectors (as it is shown in table 4.1 above) are widely diverse by nature. Variations may also arise within the formal financial sector, which includes private as well as government banks. Similarly, one can observe the semiformal sector to involve many actors like micro finance institutions and savings and credit cooperatives and farmer multipurpose cooperatives with their own distinctive roles. Furthermore, the different types of sources of the same sector may vary greatly in the way they screen borrowers and hence, they are subject to differ in the amount of loan they provide, the repayment basis and need for collateral and guarantor as a security against the Loan provided. Ideally, one needs to differentiate between different types of source in formal, semiformal and informal sectors. However, in order to keep the analysis manageable, the sources are merged and structured as formal, semiformal and informal sector.

Table 4.2, below, shows that the distribution of formal, semiformal and informal sources in terms of the utilization of the loan. Loans utilized for non-agricultural business purpose attract **17 %**, farm inputs and equipment **56 %** and Consumption **28 %** of total credit contracts. Loan utilized for business purpose is served mainly by semiformal and informal credit sector with share of 44.44% and 47.22 % of the total loans provided. Loan employed for farm inputs and equipment which attract 56 % of total lending are primarily served by the semiformal credit sources with a major share of 75.63%.

Table 4.2: Utilization of the loan from formal, semiformal and informal sources

Sources	**Utilization of the loan**						
	Total loan contracts	Non-Agricultural Business		Farm Input and Equipment		Consumption and Other	
	N	**n**	**%**	**n**	**%**	**n**	**%**
Formal sources	7	3	8.33	4	3.36	0	0.00
Semiformal sources	124	16	44.44	90	75.63	18	30.51
Informal sources	83	17	47.22	25	21.01	41	69.49
Total	214	36	17.00	119	56.00	59	28.00

Alternatively, informal credit tends to cover approximately 70% of the consumption needs and also accounts for a substantial share **47.22%** of the need for financial business purposes of smallholders. Formal credit is channelled to both business and farm input and equipment needs, though it captures only a small volume **17%** of the total loan contracts. In summary, consumption loans are more likely from the informal financial sources and less likely from the semi-formal and formal

sources of finance whereas loan to farm equipment and inputs are mainly from both formal and semiformal sources of finance.

Table 4.3 Security requirement, gender of the contractor and maturity date of loan

SOURCES	Average loan maturity in (months)	Loan secured by Guarantor		Loan secured by collateral		gender of the contractor	
		Yes	No	Yes	No	Male	Female
		N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Formal sources	10.71	6 (86%)	1 (14%)	0 (0%)	7 (100%)	6 (4%)	1 (2%)
Semiformal sources	11.7	106 (86%)	17 (14%)	45 (37%)	78 (63%)	94 (61%)	30 (51%)
Informal sources	6.24	25 (30%)	58 (70%)	11 (13%)	72 (87%)	55(35%)	28(47%)
Total		137 (64%)	76 (36%)	56 (26%)	157 (74%)	155 (72%)	59(28%)

As it is shown in table 4.3 the repayment period of credit, on an average basis, loans from formal and semiformal credits mature relatively in a longer due date (in 10.7 and 11.7 month respectively) than informal sources of finance (is due 6.23 months). The average repayment period of semiformal source of sample respondents in the data set is a comparable result with the previous researches 9.5 months average repayment period which was reported by Amha (2010). Regarding the collateral and guarantor requirements of the different source, table 4.3 shows that most of the credit contracts requires guarantor (64%) than collateral (26%). This result reflects the existing fact that smallholder farmers in the study area in particular and in Ethiopia in general have little acceptable collateral, due to either lack of assets or unclear property rights or proper registry system for movable assets they possess (Amha, 2010).

Further, table 4.3 presents information on gender of the contractor of a loan for different sources of finance. Of the credit contract provided to men, semi-formal sources provide the major share of 61 % while informal sources account for 35% Whereas the credit contract provided to women are a fairly share of contribution is made by informal 51 % and semiformal 47 % financial intermediaries. It is also shown that individual characteristics of loan contractors do play a role using credit sources. It is evident from the analysis that female contractors have a lower number than male contractors in using formal and semiformal credit. In general, the use of credit by women is limited, only 28 % of total lending contracted is being made by female borrowers.

4.2. Determinants of smallholder farmers' preferred credit choice

The study applied a multinomial logit model to examine the determinants of the probability of choice of formal, informal or semiformal credit. The choice of credit by a smallholder farmers as dependent variable are assigned as Y with **"1"** represented choosing **formal sources**, **"2"** choosing **semi-formal sources** while **"3"** represented choosing **informal sources**. The model is designed in such a way that informal sources as the referent group and therefore estimated likelihood of smallholders farmers choice for formal and/or semiformal sources in relative to informal sources.

Table 4.4. Determinants of preferred credit choice: Multinomial logistic regression ("informal "as referent)

	Formal source		Semi-Formal Source	
	Coefficient	Standard error	Coefficient	Standard error
Intercept	9.950***	3.393	-8.239***	1.876
Age	-.236***	.078	.158***	.034
Agricultural experience	-.158**	.076	.012	.029
Active labour in the household	4.719**	1.873	.059	.632
Total family size	-4.080**	1.744	-.004	.630
Inactive household members	5.784	1.944	-.309	.655
Land size	-.940	1.762	1.777**	.868
Livestock ownership	-.078	.104	.047	.056
Distance from local market	.041	.188	-.084	.091
Distance from central market	.224	1.650	-.728*	.428
Distance from F. Institution	-.156	1.640	.682	.424
Female	.318	1.059	-.068	.586
Married	-4.176***	1.418	.020	.653
Educated	4.925***	1.298	-.410	.553
Muslim	-2.774**	1.249	.023	.766
Cooperative members	-2.200**	1.023	-.105	.642
Number of observations :193				
LR Chi²(30)= 185.248				
Prob > chi² = 0.000				
Cox and Snell = .617				

Notes :
- Dependent variable: credit-choice assigned as Y with "1" represented formal sources, "2" semi-formal credit while "3" represented informal credit.
- "3" informal credit serves as the reference group
- *, ** and *** denote significance at the 10, 5 and 1 per cent levels, respectively.

Table 4.4, presents the results of the survey where the results are interpreted as the probability of selecting one of the sources (formal or semiformal of finance) over informal sources. The table shows that most of the included variables are significant with respect to at least one source of finance. Apparently, only the variables age of the smallholder farmers appear to be useful predictors for distinguishing smallholders likelihood of choosing both formal and semiformal sources of finance in relative to informal sources. Farmer's age have shown significant and opposite effects: negative for formal sources and positive for semiformal sources. The negative sign of age indicate that the probability of choosing formal sources decreases as age of the smallholder farmers increases. The positive sign of age indicate that the probability of choosing semi-formal sources increases relative to informal source of finance as age increases. This likely reflects that older people are less likely to opt for formal source of finance and more likely to go for semiformal sources as compared to informal sources of finance.

The regressions result also display an interesting result with respect to the relationship between smallholder farmers agricultural experience, total family size and number of active labour in the household and the preference to formal credit. The results confirm that these three variables are a statistically significant determinant of credit choice. The positive coefficient of estimates show that smallholder farmers with greater active labour in the household are more likely to choose formal sources in relative to informal sources of finance. The negative coefficient of the estimate for agricultural experience and the total family size indicates that smallholder farmers with greater agricultural experience and larger family size in the household are less likely to choose formal sources in relative to informal sources of finance. Furthermore the estimate shows the probability of choosing formal credit tends to decrease, reflecting a negative significant effect of being married, Muslim and a member in farmer cooperative.

In addition, the result shows that educational status of the smallholder farmer was a relevant factor that significantly influenced smallholder farmers' preference to formal credit relative to informal sources. It is evident from the analysis that educated smallholder farmers are more likely to demand credit from formal sources than informal sources. A higher number of years of education of the smallholder farmer significantly increase the probability of the farmer preferring credit from formal sources. This result is supported by previous empirical studies conducted by (Dzadze et al., 2012, Barslund and Tarp, 2008) as they exhibits an additional year of education of the household head significantly reduces the probability of the household demanding credit from informal sources.

With respect to the smallholders farmers choice of semiformal source of finance over informal sources, in addition to age of the smallholder farmer, land size used for coffee cultivation and distance from the central market appears to be a relevant factor. The positive sign of smallholders framers coffee land size ownership shows that the larger the farm size they have the more likely

choosing semiformal source of finance than informal sources of finance. Distance to the central market were found to have a negative significant influence on the probability of choosing semiformal source of finance than informal sources of finance. The shorter the time taken to reach the nearest central market would result to a greater degree of preference to semiformal sources of finance than informal sources of finance.

Among the set of predictors included in the model, this estimation does not give sufficient evidence to support the likelihood of a household head gender, livestock ownership, distance from financial institutions and local market on choosing both formal and semiformal source of finance in relative to informal sources of finance. In this analysis, the probability of the model chi-square (185.248) was 0.000, less than or equal to the level of significance of 0.001. Thus we reject the null hypothesis that there was no difference between the model without independent variables and the model with independent variables. The existence of a relationship between the independent variables and the dependent variable was supported. Therefore, this shows that the model is a good fit for the data.

4.3. Determinants of smallholders' commercialization

The predicted variable and estimation result of the *two-limit tobit* model are given in table 4.5. The table shows the likelihood ratio of the fitted model, F value of 8.00 (df=13) with a p-value of 0.001 tells that the model as a whole fits significantly better than a model with no predictors. We can also see the coefficients, their standard errors, the t-statistic, associated p-values, and the 95% confidence interval of the coefficients.

With respect to the predictor variables in all estimates, most of them appear to be relevant in determining the probability of Selling more/less portion of the coffee produce through the Ethiopian coffee supply chain. As it is shown in table 4.5 it appears that experience in agriculture, total

Table 4.5 Determinants of smallholder farmers extent of commercialization.

Tobit regression — Number of obs = 193; F(13 , 180) = 8.00; Prob > F = 0.000; Log pseudolikelihood = -14.472; Pseudo R^2 = 0.727

proportion	Coef.	Robust Std. Err.	t	p>|t|	[95% Conf.	Interval]
Age	0.001	0.003	0.13	0.89	-0.005	0.006
Female	-0.058	0.054	-1.07	0.28	-0.164	0.049
Married	-0.009	0.052	-0.17	0.86	-0.112	0.094
Experience in agriculture	0.008***	0.003	2.63	0.00	0.002	0.014
Total Family	0.024**	0.011	2.24	0.02	0.003	0.045
Adequate of family labour	0.105*	0.054	1.95	0.05	-0.001	0.210
Distance from market	-0.010*	0.006	-1.56	0.09	-0.023	0.003
Extension service	0.078*	0.043	1.81	0.07	-0.007	0.163
Members in cooperatives	0.130***	0.049	2.67	0.00	0.034	0.226
Total production	0.006	0.007	0.91	0.36	-0.007	0.020
Distance from institutions	-0.078*	0.045	-1.75	0.08	-0.166	0.010
_Isemiformal	-0.128**	0.062	-2.05	0.04	-0.250	-0.005
_Iinformal	-0.09*	0.051	-1.69	0.09	-0.185	0.014
/sigma	0.229	0.015			0.199	0.259

Obs. Summary: 21 left-censored observations at proportion<=0; 171 uncensored observations; 1 right-censored observation at proportion>=1

household size, adequacy of household labour force, participation in agricultural extension package, distance from the financial institutions as well as preferred credit source of finance are statistically

important predictors. The positive and significant coefficient of the estimates shows that smallholder farmers with a large household size supported by an adequate household labour force in the household are found to be more likely to commercialize much of their produce via the supply chain. The regressions also show an interesting result with respect to the relationship between smallholder farmer's participation in agricultural extension service and commercialization of the produce through the supply chain. Farmers who participate in agricultural extension service appear to be more likely to commercialize more of their coffee product through the coffee value chain than sells to local market and household own consumptions. It is also evident from the analysis that smallholder farmers far from semiformal financial institutions have a lower probability of selling more of their produce through the supply chain.

Distance to the market and semiformal institutions were found to have a negative significant influence on the level of smallholder extent of commercialization. The shorter the time taken to reach the nearest market and financial institution would result to a greater degree of commercialization coffee via the supply chain. This implies that the location of farmers in respect of the markets and institutions is an important factor in encouraging smallholders to increase their sales via the local collectors and cooperatives. Finally, the terms for the dummy coded source of finance (formal, semiformal and informal sources dummy coded as _1choice_1, _1choice_2, and _1choice_3 respectively) have a slightly different interpretation. Formal source (_1choice_1) was automatically omitted and used as a reference group in order to show the effect of semiformal and informal sources on the predicted variable, extent of commercialization, as compared to the reference group, formal source. As such, the estimates show that smallholders who prefers to opt for semiformal source of finance are less likely to sell their products through the supply chain than those who chose formal source of finance. Likewise, the negative significant coefficient predicted value show that smallholders who prefer to choose for informal source of finance are less likely to commercialize their products through the supply chain than those who chose formal source of finance.

Moreover, the overall effect of sources of finance as a single predictor on the predicted variable was tested using the Stata overall **test** command. Overall effect of **credit choice** is a statistically significant predictor with F value of 3.82 (df=2) at a p-value of 0.05 in explaining the predicted variable, proportion. The ancillary statistic /sigma value of (.229) can be compared to the standard deviation of extent of commercialization which was (.253) and this becomes visible that there is a substantial reduction of error in the model. Finally, a summary of the observations is given. In the data set, 21 and 1 observations are left- and right-censored respectively, while 171 observations are uncensored.

5. DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

In this section the results are discussed, conclusions are drawn and recommendations are given.

5.1. Discussions

With respect to the existing demand and supply for credit, the analysis suggests that there is a mismatch between the preferred and existing financial sources in the study area. Of all the credit provided to the smallholder farmers formal sources accounts the smallest share of the credit contracts, where the smallholders farmers preference for formal credit is still higher than the existing supply. This shows that there is a gap between the demand and supply of smallholder farmer financing from formal financial institutions. Beside the gap between the supply and demand, formal bank lending in the study area meets only little share (3%) of overall demand for credit. The majority, around 60 %, of the existing supply for credit comes from semiformal institutions; more specifically from saving and credit cooperatives, which accounts 50 % of the total credits provided to the smallholders. This result contradicts with the earlier studies by Emana (2005) who reported informal sources of finance as the major source of finance for most of the smallholders in Ethiopia. This is possibly because of the fact that for the past one decade, studies Petit (2007) reported that there was booming outreach of saving and credit cooperatives and microfinance institutions in Ethiopia. A most recent finding of Amha (2010) also strengthen this research result as it reported the dominancy of credit cooperatives as a main source of financing smallholder farmers in Ethiopia. This research, therefore, exhibits the shift in dominancy of semiformal sources of finance over the informal sources of finance while the credit supply provided by formal sources of finance remains to meet only little share of overall demand for smallholders credit.

With regard to the current credit sources, semi-formal sources in general and saving and credit cooperatives in particular appear to be the main sources of credit to smallholders in the survey area. This result is consistent with the previous research result by Emana (2005) and Petit (2007) which shows an increasing outreaching trend in saving and credit cooperatives and (Amha, 2010) shows the dominaency of saving and credit coopratives as a source of finance in Ethiopian. Despite the coexistence of sources of finance, it is important to note from the results that the groups of formal, informal and semiformal financial intermediaries seem to be attracted by some dominant credit providers in each group. For instance, semiformal sector dominantly consists of savings and credit cooperatives whereas the majority of the group of informal lenders consists of family and friends. Family and friends as the main source of informal source is consistent with the previous research result reported by Petit (2007). This result is further supported by a more recent research report by Amha (2010). Regarding smallholders credit utilization, consistent with Pham and Lensink (2007), loan utilized for consumption are mostly from the informal financial sources and less likely from the semi-formal and formal sources of finance. Loan utilized for farm equipment and inputs are mainly

from semiformal sources of finance. This result is also substantiated with the previous studies of Amha (2010), whose findings imply that the majority of the credit was intended and utilized for farm input and equipment purposes in Ethiopia.

With respect to the determinants of preferred credit choice from formal, semiformal and informal sources; estimates suggest that a smallholder farmer having a large economically active family labour is more likely to choose formal credit. The existing literature also supports that the greater the productive human capital, such as number of adults, the more likely a farmer is to demand formal credit to get access to fertiliser and other inputs (Barslund and Tarp, 2008). Likewise, a smallholder with a bigger coffee farm size appears to be more likely to prefer semiformal sources than informal sources. This means that as the farm size increases, the probability of choosing semiformal sources increases. Yehuala (2008) and Barslund and Tarp (2008), had also reported that farm size positively influences the level of access to finance in Ethiopia and Vietnam respectively. It is evident from the analysis that educated smallholder farmers are more likely to demand credit from formal sources than informal sources. This result is substantiated by previous empirical studies conducted by Akoten et al. (2006), Barslund and Tarp (2008) and (Dzadze et al., 2012), in Kenya, Vietnam and Ghana respectively. They exhibits an additional year of education of the household head significantly reduces the probability of the household demanding credit from informal sources. Further, they argue that lower level of education is associated with lesser ability to access and comprehend information on credit terms and conditions, and ability to complete loan application forms properly in the formal sources. Alternatively, the probability of choosing formal credit tends to decrease reflecting a significant negative effect of being Muslim and having bigger family size on the probability of using formal credit. As the number of persons in the household increases, the probability of farmers' preference towards formal source of finance reduces. This result is in line with the previous studies by Akoten et al. (2006).

Regarding determinants of smallholders' commercialization, a smallholder farmer with larger household size supported by an adequate household labour appears to be more likely to commercialize much of their produce via the supply chain. Previous research studies by Gebremedhin and Jaleta (2010) and Kefyalew (2013) had also reported that household labour supply is positively associated with the probability of smallholder farmers extent of commercialization in Ethiopia. This study also validates their result. Alternatively, this research result contradicted with the previous research result by Martey et al. (2012) who reported that as the number of persons in the household increases, the probability of farmers' orientation towards commercialization decreases in Ghana. They also argued that a larger household size deters households from market orientation due to its effect on increasing household domestic consumption needs. With this research contact, since coffee is the main source of cash for buying food items it is not likely for the household to consume the much of the coffee produce at a household level.

Farmer's active participant in agricultural extension service was positive and significantly related to commercialization. This means that farmers who have greater access to agricultural extension service are more likely to commercialize their produce through the supply chain. This implies that the service provided by the agricultural extension programme increased awareness and access to important information about production and marketing decisions. Moreover, this result confirms the previous research result reported by Martey et al. (2012).

Distance to the market and semiformal institutions were also found to have a negative significant influence on the level of smallholder extent of commercialization. The shorter the time taken to reach the nearest market and financial institution would result to a greater degree of commercialization coffee via the supply chain. This implies that the location of farmers close to the markets and institutions is an important factor in encouraging smallholders to increase their sales via the local collectors and cooperatives. This result is in line with the findings of Gebremedhin and Jaleta (2010), Martey et al. (2012) and Tufa et al. (2014) who found that being closer to market, increase extent of commercialization and market participation. With respect to access to finance and commercialization, estimates suggest that smallholders who opt for informal and semiformal source of finance are less likely to commercialize their products through the supply chain than those who choose formal sources of finance. Moreover the overall access to finance has a significant and positive influence to farmer alignment towards commercialization via the Ethiopian coffee supply chain. Lack of credits has been noted as one of the major constraints affecting against agricultural productivity of smallholder farmers (Kefyalew, 2013). Smallholder farmer access to finance can serve as a critical catalyst for economic growth and poverty alleviation. Access to credits is expected to enhance a link for farmers with modern technology through the purchase of inputs, pay wages, invest in machinery. This will lead to increase agricultural productivity, induce market orientation and participation and thus greater commercialization (Martey et al., 2012, Agwu et al., 2013, Kefyalew, 2013, Lerman, 2004)

5.2. Conclusions

The main conclusions of this research are:

- The study shows the coexistence of formal, semiformal and informal sources of finance in the study area. Overall, semi-formal sources in general and saving and credit cooperatives in particular appear to be the main sources of credit for smallholders coffee farmers. Formal sources of finance in the study area meets only little share (3%) of overall demand for credit.

- With regard to smallholder's credit preference, the study indications that compared to informal sources of finance the probability of choosing formal sources increases if the borrower exhibit higher level of education and bigger economically active family size while a bigger coffee farm size increases the probability of the farmer choosing semiformal source.

- Regarding smallholders commercialization, farmers with a large family size, adequate family labour supported by an active participation in agricultural extension service are found to be more likely to commercialize much of their produce via the supply chain, whereas the distance to the market and semiformal institutions were found to have a significant negative influence on the level of smallholder farmers commercialization.

- Smallholder farmers who prefer to choose formal sources of finance were found to be more likely to commercialize their produce through the supply chain than those smallholder farmers who prefers to access from semiformal and informal sources of finance.

5.3. Recommendation and Policy implications

The following recommendations and policy implications are drawn from the results of this study.

- As in many countries in Sub-Saharan Africa, the smallholders coffee farmers in the study area are left out of the formal credit systems. This research, exhibits that the credit supply provided by formal sources of finance remains to meet only little share of overall demand for smallholders credit. Given the demand for smallholder farmers from formal sources there is need for policy measures to increase access to smallholders credit from formal sources of finance. Both formal and semiformal financial institutions should also be encouraged so as to be able to accommodate for the financial needs of smallholder coffee farmers.

- Farmer's active participant in agricultural extension service positively influence smallholder farmers extent of commercialization. This, therefore, implies while designing policies and implementation of rural development projects due emphasis should be given for intensification of agricultural extension service which may also provide a combined access to credit for smallholders. This will enhance smallholder coffee farmers awareness and access to important information about production, marketing decisions and access to financial services.

- In the Ethiopian coffee supply chain numerous market participants are involved. However, most of the coffee value-chain stakeholders, particularly smallholder farmers lack access to finance for improving their produce. Though Intensifications in financial access are needed at all levels of the supply chain, special interest should be given to increase the access to finance to smallholder farmers who are most vulnerable to food insecurity and poverty. This, therefore, implies that there is a need for policy review and a significant consideration should be given to enhance smallholder coffee farmers' access to finance and to strengthen the coffee value chain linkage through value chain financing scheme.

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APPENDICES

Appendix -A: Questionnaire for smallholder Coffee farmers, English.

Dear respondent (interviewee)!

This survey is meant only for research purpose and its main objective is to generate relevant information that could help in the development of rural financial system in Ethiopia, as it still remains the backbone of the country's economy and source of livelihoods for millions of smallholders like you. The **objective** of the study is to investigate the availability and effect of various sources of finance for smallholder farmers on coffee value chain performance.

This survey is thus structured in such a way that in the beginning, we will ask you some personal questions like your gender, marital status, education level, etc. which will help us to get to know each other. Further, in this interview, we will discuss issues like your source of finance and the major determinants to access the different sources of finance. Later in this interview, we will discuss about your awareness about the different sources of finance, the procedures for having an access to this source.

The survey should take no longer than 40 minutes of your time. Your response is of the **utmost importance** to us and all **results from the survey will be reported in the study as statistical summaries** only.

You will be assured of **complete confidentiality**. The information you provide in this survey will be accessed by the researchers only. There is no "**right**" **or** "**wrong**" answer and you are also free to refuse answering questions you don't feel right for you.

If you have any questions or comments regarding this survey, don't hesitate to contact us at +251912106864 or e-mail us at shambachew.hussen@wur.nl

I highly appreciate for your willingness to participate as a respondent in this survey.

Farmer Identification Number

District	Zone	Wereda	Village	Supervisor	Enumerator	Identification No

I. General Information/ Background statistics of the smallholder farmers

1.1. *Smallholders farmers Contractors characteristics*

1.	Sex of the household: 1= Male 2= Female	
2.	Age of the head of (years) _____	
3.	Marital status: 1= Unmarried 2= Married 3= Divorced 4= Widowed	
4.	Educational attainment levels of the head of household head: 1= Illiterate 2= Read and writes 3= Primary school 4= Secondary school 5= Other specify_____	
5.	Religion	
6.	Experience in agricultural activities in years	
7.	Number of years in coffee vegetation	

1.2. *Household characteristics*

Family size	
Total Family size	
Active Labor	
Children below 5 years	
Family labor availability	
1. Adequate	
2. Inadequate	
Dependency ratio	
Family Labor in man equivalent	
Farm land	
Farm size (ha)	
Owned (ha)	
Rented (ha)	

Farm Land use	
Coffee land (ha)	
Other croup land (ha)	
Farm Land Distance (km) from:	
The house (km)	
The local market	
The central market	
Lending institution office	
Distance from credit organ (km)	
Formal	
semiformal	
Informal and	

Accessibility to the village	
1. Footpath	
2. Ungraded road	
3. Graded road	
4. Paved road	
Number of livestock owned	
Donkey	
Horse	
Goat/ Sheep	
Chicken	
Caws/ Oxen	
Other	
Total livestock	

1.3. *Socio economic participation of the smallholders*

1. Did you participate in the agricultural extension package program in the last 12 months? 1 Yes 2. No	
2. If yes, what was the type of the package you used? 1= Crop production 2= Animal rearing 3= Animal fattening 4= small-scale irrigation 5= Others specify__	
3. How did they provide you the technology? 1 = In cash 2 = On credit	
4. If on credit, who was the source? 1= Formal Financial institutions 2= Semi formal Financial institutions 3= in formal financial institutions 5= Others specify_____	
5. Membership of Farmers cooperative 1= Yes 2= No	

II. Source of Finance, Characteristics and Requirements of Loan.

2.1. *Knowhow of smallholders about the different source of finance*

	1. Were you demanding for credit in the last 12 months? 1. Yes 2. No	
	2. Did you take any credit during the last 12 months? 1. Yes 2. No	
	3. How well do you know about the different financial sources available to the smallholder farmers?	
	Formals Sources: 1= I knows well all of them 2= I know some of them 3= Never heard of them.	
	Informal sources: 1 = I know well all of them 2= I know some of them 3= Never heard of them.	
	Semiformal sources: 1= I knows well all of them 2= I know some of them 3= Never heard of them.	
	4. How do you know about the sources of finance? 1= Dissemination from government officials 2= Advertisements from the financial institutions 3= From mass media news 4= Socialization, friends, neighbours and family 5= I have no information at all	

2.2. Sources of finance

	SOURCE	Loan characteristics						
		Amount and (In Birr)		Purpose	Repayment basis	Loan maturity in months	Loan is secured with a Guarantor	Loan is secured with a collateral
	Formal	*Cash*	*Kind*					
	Commercial Bank of Ethiopia.							
	Private commercial banks							
	Rural bank							
	Semiformal							
	Microfinance institutions							
	Savings and credit co-operatives							
	Farmers' cooperatives							
	Others semiformal institutions							
	Informal							
	Moneylenders							
	Family							
	Suppliers' credit							
	Trader credit							
	Friends							
	Equip							
	Idir							
	Maheber							
	Other							

Note:

Purpose can be for: 1. Business 2. Farm imputes and equipment's 3. Consumption 4. Other

Repayment basis can be: 1. Regular 2. Otherwise

Loan is secured with a Guarantor: 1. Yes 2. No

Loan is secured with a collateral 1. Yes 2. No

Others may include: Other Local associations, governmental and non-governmental organizations operating at grass root level

III. Determinants of access to finance

3.1.1. How important is the following Contractors characteristics to access finance from formal, semiformal and informal sources?

		For Formal financial institution	For Semiformal financial institutions	For Informal institution
	Contractors characteristics			
	1. Having higher farming experience			
	2. Having higher Education level			
	3. Marital status / being married			
	4. Gender/ being female			

3.1.2. Please rate how important is the following social, economic participation and ownership helps you to access finance from formal, semiformal and informal sources?

		For Formal financial institution	For Semiformal financial institutions	For Informal institution
	. **Socio economic participation**			
	1. Farmers multipurpose cooperative membership			
	2. Farmers' extension package participation			
	3. Prior Experience in credit use and repayment			
	4. Membership in a credit group			
	5. Membership of Farmer Based Organization			
	6. Direct road access to the village			
	7. Provision of collateral			
	8. Provision of Guarantor			
	9. Purpose of the loan			

3.1.3. Rate how important is the following property ownership entitlements facilitates you to access loans from formal, semi–formal and informal sources?

		For Formal financial institution	For Semiformal financial institutions	For Informal institution
	Ownership entitlements			
	1. Having more Size of farm land			
	2. Having more Livestock ownership			
	3. Ownership of Bank savings accounts			
	4. Total value of assets possessed			
	5. Availability of adequate family labour			
	6. Having contracted with the trader			
	7. Having a poorer certificate.			

3.1.4. Rate how important is the following property ownership entitlements facilitate you to access loans from formal, semi–formal and informal sources?

		For Formal financial institution	For Semiformal financial institutions	For Informal institution
	3.1.5. Characteristics of the loan			
	1. Interest rate requested			
	2. Group based lending requirement			
	3. Repayment period			
	4. Repayment frequency			
	5. Lending procedures			

3.2. *Farmers' attitude towards risk, risk taking ability and perception towards the loan.*

1. In your view, is borrowed from the following financial sources risky?

SOURCE	Yes, very risky	It is risky	Indifferent	No, it is not	No, it is almost risk free
1. Formal source					
2. Semi-formal source					
3. Informal source					

2. Did you give-up to take loans due to fear of risk in the last 12 months?

From formal source	1. Yes, I do	2. No, I don't	
From Semi-formal source	1. Yes, I do	2. No, I don't	
From Informal source	1. Yes, I do	2. No, I don't	

3. Is there a possibility that you will not be able to pay back the loan, or will you have difficulties paying back this loan?

1= Can pay with difficulty	
2 = Can pay	
3= I can't pay	
4= Have no idea	

4. Knowhow and Perception of loan procedures

Do you know the procedure how to get financing from formal financial institutions?	1 Yes	2. No	
In your view How easy is the procedures	1. Easy	2. Difficult	
Do you know the procedure how to get financing from Semiformal financial institutions?	1 Yes	2. No	
In your view How easy is the procedures	1. Easy	2. Difficult	
Do you know the procedure how to get financing from Informal financial sources?	1 Yes	2. No	

5. Which one do you prefer most to choose as a preferred source of finance?

I. Formal II. Semifinal III. Informal source.

3.3. *Production and market integration*

List the type of produce you cultivated and their average production and extent of commercialization in 2012/13.

Produce	Area (ha)	Total production	Local consumption		To the coffee Supply chain	
			Household consumption.	Sales to local market	Collector	Cooperatives

3.4. Utilization of credit and its effect on productivity

	• What kind of coffee production trend have you observed for the last five years? 1= Increasing 2= Decreasing 3= No change 4= I don't know	
	• Did you take any credit during the last 12 months? 1. Yes 2. No	

	• If yes?
	  • What kind of coffee production trend have you observed for the last five years?
	  1= Increasing 2= Decreasing 3= No change 4= I don't know
	  • Did you able to produce better quality?
	  1. Yes 2. No
	  • Did you able to sell in a better market at a higher price than before?
	  1. Yes 2. No
	  • How much do you think the credit enhances your capacity?
	  1= Highly 2= to some extent 3= I don't know 3= not at all	

THANK YOU!!!

Appendix -B: Questionnaire for smallholder Coffee farmers, Orommifa.

Gaaffannoo Qonnaan Bultoota Xixiqqoo Buna Oomishaniin Guutamuuf Qophaa'e, 2013

Kabajamtoota warreen yaada keessan naaf kennitan hundaaf:

Gaaffannoon kun qorannoo gaggeefamu kana qofaaf kan gargaaru ta'ee, kaayyoon isaa odeeffannoo dhugaa ta'e kan guddina sirna faayinaansii baadiyyaa Itiyoophiyaa keessatti argamuu fi kan yeroo ammaas dinagdee biyyattiitif lafee dugdaa ta'ee fi madda galii ummatoota miiliyoonotaan lakka'amanii fi waldaalee xixxiqqaadhaan gurmaa'an kan isaan keessaa isin tokko taatan maddisiisuu dha. Kaayyoon qorannoo kanaa maddootni faayinaansii heddu kanneen qonnaa bultoota waldaalee xixxiqqaadhaan buna omishu irratti gurmaa'aniif haala mijataa fi bu'aa isaan qaban addaan baasuu dha.

Haaluma duraa duba gaaffannoo kanaatin jalqabarratti gaaffilee dhuunfaa kan wal baruuf nu gargaaraan kanneen akka saala, haala fuudhaaf heerumaa, sadarkaa barumsaa fi kkf irraa kan ka'u ta'a. Kanaan alattis dhimmoota kanneen akka madda faayinaansii keessanii fi maddoota faayinaansii adda addaa argachuuf wantoota murteessoo ta'an irratti kan mari'annu ta'a. Dabalataanis, hubannoo isin waa'ee maddoota faayinaansii irratti qabdanii fi maddoota kanneen argachuuf sadarkaaleen keessa darbuu qabdan maal faa akka ta'an irratti ni marri'anna.

Gaaffannoon kun daqiiqaa 40 ol hin fudhatu. Yaadni keessan nuuf baay'ee murteessaa fi cuunfaan gabaasa isaas dhuma qorannoo kanaa irratti kan dhiyaatu ta'a.

Yaada keessan yeroo kennitan offitti amanamummaa guutuudhaan haa ta'u. Odeeffannoon isin nuuf keennitan kan qaqqabu abbaa qorannicha gaggeesse bira qofa ta'a. Yaada keessan keessatti dhugaa yookiin sobni qofti dirqama miti, kanaaf yoo yaada addaa qabaatan shakkii tokko malee waan isinitti dhagahame barreessuun ni danda'ama.
Gaaffannoo keenya irratti yaada yookiin gaaffi yoo qabaatan karaa ifaa fi bilisa ta'een bilbila kanaan +251912106864 or e-mail us at shambachew.hussen@wur.nl nu qunnamuu ni dandeessuu.

Fedhiidhaan yaada keessan naaf kennuu keessaniif guddaa galatoomaa!

Gaaffannoo Idilee Qorannoof Qophaa'e

Lakkoofsa eennyummaa qonnaan bulaan ittiin adda bahu:

Distriktii	Godina	Aanaa	Ganda	Too'ataa	Funanaa	Lakkoofsa ittiin adda bahan

1.Odeeffannoo Waliigalaa /Seenaa Qonnaan Bultoota Xixiqqoo

1.1. Amaloota Qonnaan Bultoota Xixiqqoo

8.	Saala abbaa warraa: 1= Dhiira 2= Dhalaa	
9.	Umrii abbaa warraa (Waggaadhaan) _____	
10.	Haala fuudhaaf heerumaa: 1= Kan hin fuune/heerumne 2= Kan fuudhe/Kan heerumte 3= Kan wal hiikan 4= Kan abbaan warraa jalaa du'e	
11.	Sadarkaa barumsaa abbaa warraa isa ol aanaa: 1= Kan hin barate 2= Barreessuu fi dubbisuu kan danda'u 3= Sadarkaa 1ffaa kan barate 4= Sadarkaa 2ffaa kan barate 5= Kan biraa yoo jiraate haa ibsamu_____	
12.	Amantaa	
13.	Muuxannoo hojii qonnarratti qaban (waggaadhaan)	
14.	Buna omishurratti muuxxannoo qaban	

1.2. Amaloota abbaa warraa

Baay'ina maatii	
Baayina waliigala maatii	
Humna hojjechuu danda'u Daa'imman waggaa 5 gadii	
Argama maatii humna hojjechuu danda'uu/hojidhaaf umriin gahu)	
Gahaa dha	
Gaha mitti	
Reshiyoo hirkaatumma	
Humna namaa matii keessa	
Lafa qonnaa	

Bal'ina ooyiruu (hek)	
Kan dhuunfaa (hek)	
Kiraa (hek)	

Itti fayyadama lafaa	
Lafa bunaa (hek)	
Lafa oomisha biroo	
Fageenya lafa qonnaa (km)	
Mana jireenyaa irraa	
Gabaa naannoo irraa	
Gabaa waliigalaa irraa	
Waajjira liqaa kennu irraa	
Fageenya waajjira liqeessuu irra (km)	
Idilee irraa	

Gariin idilee irraa	
Al-idilee irraa	

Haala mijataa Baadiyyaa jiru (karaa)	
5. Daandii warra lafoo	
6. Daandii asphaalti	
7. Daandii asphaaltii	
Qabeenya beelladaa	
Harree	
Farda	
Re'ee/ Hoolaa	
Lukkuu	
Sa'a/ Qotiyyoo	
Kan biraa	
Walii gala	

1.3 Hirmaannaa waldaaleen xixxiqqoon sochii hawaas-diingdee keessatti qaban

6.Ji'oottan darban 12 keessatti sagantaa paakeejii ekisteenshinii qonnaa keessatti hirmaatanii beektuu? 1. Eeyyee 2. Lakki	
7.Yoo Eeyyee jettan, sagantaa kam fayyadamaa turtan? 1= Omisha midhaanii 2= Horsiisa beelladaa 3= Horii furdisuu 4= Jal'isii xixxiqqaa 5= Kan biraa yoo jiraatea ibsaa_____	
8.Paakeejii teeknoolojii kana haala kamiin isiiniif Kennan? 1 = Harkaa harkatti 2 = Duubeedhaan	
9.Yoo duubeedhaan ta'e maddi isaa eessa? 1= Dhaabbata faayinaansii idilee 2= Dhaabbata faayinaansii gariin idilee 3= Dhaabbata faayinaansii al-idilee 4= Kan biraa_____	
10. Isin miseensa waldaa qonnaan bulaatii? 1= Eeyyee 2= Lakki	

11. Madda faayinaansii, amalootaa fi haalota liqaadhaaf guutamuu qaban

2.1. Hubannoo waldaaleen kunneen madda faayinaansii irratti qaban

	5. **Ji'oottan darban 12 liqaa fudhachuuf barbaadaa turtee?** 1. Eeyyee 2. Lakki	
	6. Ji'oottan darban 12 keessa liqaa fudhattee beektaa? 1. Eeyyee 2. Lakki	
	7. Waa'ee maddoota faayinaansii gara garaa kanneen qonnaan bultoota waldaalee xixxiqqaadhaan gurmaa'anii hangam beekta ? Maddoota idilee irraa: 1= Baay'ee isaanini beeka 2= Muraasa isaaniin beeka 3= Homaa hin beeku Maddoota gariin idilee irraa: 1= Baay'ee isaaniin beeka 2= Muraasa isaaniin beeka 3= Homaa hin beeku Maddoota Al-idilee irraa: 1= Baay'ee isaaniin beeka 2= Muraasa isaaniini beeka 3= Homaa hin beeku	
	8. Maddoota faayinaansii kanneen akkamitti beekuu dandeesse ? 1= Labsii mootummaan dabarsuu irraa 2= Beeksiisa Dhaabbatichi beeksiisu irraa 3= Miidiyaalee gara garaa irraa 4= Waliin jiraatoota, hirriyoota, ollaawwanii fi maatii irraa 5= Odeeffannoo homaatuu hin qabu	

2.2. Maddoota Faayinaansii

	Maddoota	Amaloota Liqaa						
		Hanga (Qarshiidhaan)		Kaayyoo	Bu'ura Liqa Deebisuu	Dheerina liqaa ji'aan	Liqaa amansiisaa waabii wajjiin	Liqaa amansiisaa qabsiisaa wajjiin
	Idilee	Harkaan harkatti	Akaakudhaan					
	Baankii Daldala Itiyoophiyaa							
	Baankoota daldala dhunfaa							
	Baankii baadiyyaa							
	Gariin-idilee							
	Dhaabilee maayikiroo faayinaansii							
	Waldaalee liqii fi Qusannoo							
	Waldaalee qonnaan Bultootaa							
	Dhaabbata gariin-idilee Biro							
	Al-idilee							
	Maallaqa liqeessitoota,							
	Hirriyoota							
	Daldalaa liqeessaa							
	Dhiyeessaa liqeessaa							
	Abbootii qabeenyaa olaanoo liqeessan							
	Iqubii							
	Afooshaa							
	Mahibarii							
	Kan biraa							

Hub:

- Kaayyoon isaa: 1. Biznasiif 2. Calla guddistuu fi meeshaalee qonnaatiif 3. Itti fayyadamuuf 4. Kan biraa
- Bu'uraa liqa deebisuu: 1. Kan beekamu 2. Kanaan ala
- Liqaa amansiisaa wabii wajjiin 1. Eeyyee 2. Lakki
- Liqaa amansiisaa qabsiisa wajjiin : 1. Eeyyee 2. Lakki
- Kan biraa itti dabalamuu danda'u: Waldaalee nannoo kanneen biroo, Dhaabbilee mootummaa fi miti-mootummaa bu'urarraa irratti hojjetan.

III. Wantoota faayinaansii argachuuf murteessoo ta'an

3.1.1. Liqaa dhaabbilee faayinaansii idilee, gariin-idilee fi al-idileerraa argachuuf waantootni murteessoo ta'anii fi guutamu qaban irratti yaadni kee maali? Eyee/ lekki

	Wantoota murteessoo ta'an	Dhaabbata faayinaansii idilee	Dhaabbata faayinaansii gariin idilee	Dhaabbata faayinaansii al-idilee
	Ulaagaalee kontraaktarootaa (walii galtootaa)			
	1. Muuxannoo qonnaa guddaa qabaachuu			
	2. Sadarkaa barumsaa olaanaa qabaachuu			
	3. Kan fuudhe/heerumte ta'uu			
	4. Saalli dubartii ta'uu			

3.1.2. Liqaa dhaabbilee faayinaansii idilee, gariin-idilee fi al-idileerraa argachuuf waantootni murteessoo ta'anii fi guutamu qaban irratti yaadni kee maali? Eyee/ lekki

	Hirmaannaa hawaas-diinagdee qabaachuu	Dhaabbata faayinaansii idilee	Dhaabbata faayinaansii gariin idilee	Dhaabbata faayinaansii al-idilee
	1. Miseensummaa waldaalee qonna maraa			
	2. Hirmaannaa Paakeejii Ekisteenshinii qonnaa			
	3. Liqii fayyadamuu fi deebisuu irratti muuxannoo olaanaa qabaachuu			
	4. Miseensummaa waldaa liqii			
	5. Miseensummaa Dhaabbata qonnaan bulaa irratti hundaa'ee dhaabbatee			
	6. Daandii gara baadiyyaa geessu qabaachuu			
	7. Haala wabii			
	8. Haala ispoonsaraa			
	9. Sababa liqaa			

3.1.3. Liqaa dhaabbilee faayinaansii idilee, gariin-idilee fi al-idileerraa argachuuf waantootni murteessoo ta'anii fi guutamu qaban irratti yaadni kee maali? Eyee/ lekki

	3.1.4. Mirga abbaa qabeenyummaa	Dhaabbata faayinaansii idilee	Dhaabbata faayinaansii gariin idilee	Dhaabbata faayinaansii al-idilee
	1. Lafa bal'aa qabaachuu			
	2. Beellada baay'ee qabaachuu			
	3. Lakkoofsa herrega qusannaa baankii qabaachuu			
	4. Qabeenya waliigala dhunfate			
	5. Haala gahumsa humna maatii			
	6. Waliigaltee/kontraata daldaltoota wajjiin qabaachuu			
	7. Sartafikeeta hiyyumma/harkaa qalumma/ qabaachuu			

3.1.4. Liqaa dhaabbilee faayinaansii idilee, gariin-idilee fi al-idileerraa argachuuf waantootni murteessoo ta'anii fi guutamu qaban irratti yaadni kee maali? Eyee/ lekki

	i. Uulaagaalee Liqaa	Dhaabbata faayinaansii idilee	Dhaabbata faayinaansii gariin idilee	Dhaabbata faayinaansii al-idilee
	1. Hamma fedhii dhalaa gaafatamee			
	2. Wanta liqaa gareetiif barbaachisu guutuu			
	3. Yeroo kaffaltiin itti kaffalamu			
	4. Garaagarummaa (yeroo hamam kessatti akka kafalamu) yeroo kaffaltin itti kaffalamuu			
	5. Sadarkaalee liqiin keessa darbu			

3.2. Yaada qonnaan bultootni soda (riskii), dandeettii soda (riskii) ofitti fudhachuu fi Ilaalcha liqaa fudhatan kaffaluu irratti qaban

6. Akka yaada keettitti, Maddoota faaynaansii armaan gadii irraa liqii fudhachuun nama sodaachisaa?

Madda	Baay'ee sodaachisa	Ni Sodaachisa	Hin beeku	Hin sodaachisu	Homaa hin sodaachisu
4. Madda idilee					
5. Madda gariin-idilee					
6. Madda al-idilee					

7. Ji'oottan darban 12n keessatti sodaarraa kan ka'e liqii dhiistanii beektuu?

• Madda idileerraa 1. Eeyyee 2. Lakki hin dhiisne	
• Madda gariin idileerraa 1. Eeyyee 2. Lakki hin dhiisne	
• Madda al-idileerraa 1. Eeyyee 2. Lakki hin dhiisne	

8. Carraan maallaqa liqeeffattan kaffaluu hindandenyee ykn liqaa deebisuuf rakkoon isin qunnamu jiraa jettanii yadduu?

1= Rakkoo osoon qabuu kaffaluun danda'aa	
2= Kaffaluun danda'aa	
3= Yaada hin qabu	
4= osoo homaa hin rakkatin kaffaluu danda'aa	

9. Hubannoo fi beekumsa sadarkaalee liqii

✓ **Sadarkaalee ittiin dhabbilee faayinaansii idilee irraa liqaa itti liqeeffatan ni beektaa?** 1 Eeyyee 2. Lakki	
✓ **Haalli isaa akkam ture** 1. Salphaa 2. Rakkisaa	
✓ **Sadarkaalee ittiin dhabbilee faayinaansii gariin-idilee irraa liqaa itti liqeeffatan ni beektaa?** 1 Eeyyee 2. Lakki	
✓ **Haalli isaa akkam ture** 1. Salphaa 2. Rakkisaa	
✓ **Sadarkaalee ittiin dhabbilee faayinaansii al-idilee irraa liqaa itti liqeeffatan ni beektaa?** 1. Eeyyee 2. Lakki	
✓ **Haalli isaa akkam ture** 1. Salphaa 2. Rakkisaa	
✓ ***dhaabbilee faayinaansii idilee, gariin-idilee fi al-idileerraa ? 1 iidilee 2. gariin-idilee 3. al-idileerraa***	

2.3. Omishaa fi Walqunnamsiisa gabaa

Bara 2012/13 keessa akaakuu omishaa, omisha giddu galeessaan omishtaniif fi hamma gabaarra oolchitan tarreessaa

Omisha	Bal'ina (hek)	Omisha walii galaa	Nannootti kan itti fayyadamtan		Dhiyeessitoota bunaatiif kan dhiyaate	
			Manaaf kan oole	Gabaa naannootiif kan oole	Funantootaaf/ Sasabdootaaf/ /	Waldaaleef

2.4. Itti fayyadama liqii fi bu'aa inni oomishtummaa irratti qabu

- **Waggootan shanan darban keessatti omishni bunaa jijjiirama akkamii argisiisee jira?**

  1= Dabalee jira 2= Ni hir'ate 3= Jijjiirama hin qabu 4= Hin beeku

- Ji'oottan darban 12n keessatti liqii fudhattanii beektuu? 1. Eeyyee 2. Lakki

- Yoo Eeyyee jettan ta'e?
  - Waggootan shanan darban keessatti omishni bunaa?

    1= Ni dabale 2= Ni hir'ate 3= Jjjiiramni hin jiru 4= Hin beeku
  - Buna Qulqullina qabu omishtanii bekituu?

    1. Eeyyee 2. Lakki
  - Gabaa fooyyaa'arratti gaatii kanaan duraa oliin gatii gaariin gurgurtanii?

    1. Eeyyee 2. Lakki
  - Liqaa liqeeffachuu keessaniif dandeettiin oomishtummaa keessan hammam guddate?

    1= Sirriitti 2= Hanga muraasa 3= Hin beeku 3= Homaa hin daballe

galatoomaa!

Appendix -C: Pictures from study area in the process of data collection