ADDIS ABABA UNIVERSITY

COLLEGE OF DEVELOPMENT STUDIES

Centre for Regional and Local Development Studies

ANALYSIS OF MALT BARLEY VALUE CHAIN FINANCE: A CASE OF LEMU BILBILO DISTRICT, ARSI ZONE.

BY

JEMAL ABDO WAYU

ADDIS ABABA, ETHIOPIA

DECEMBER, 2022

ADDIS ABABA UNIVERSITY

COLLEGE OF DEVELOPMENT STUDIES

CENTRE FOR REGIONAL AND LOCAL DEVELOPMENT STUDIES

A thesis Submitted to Centre of Regional Local Development Study in partial fulfillment of the requirements for the Degree of Masters of Art in Regional Local Development Study.

BY:

Jemal Abdo Wayu

Thesis Advisor: MuluAdam Alemu (PhD)

Addis Ababa, Ethiopia

December, 2022

DECLARATION

I, Jemal Abdo Wayu hereby declare that the research thesis entitled "**Analysis of Malt Barley Value Chain Finance: A case of Lemu Bilbilo District, Arsi Zone** is my creditable and original work that has not been submitted earlier for award of any degree, diploma or fellowship to any other universities to the best of my knowledge and belief. All the sources of materials used for this thesis have been dully acknowledged.

Name: Jemal Abdo Wayu

Signature: Date: 15/6/2022

This Thesis has been submitted for examination with my approval as the supervisor.

Advisor Name: MuluAdam Alemu (PhD)

Signature: Date: 28/06/2022

Addis Ababa University,

Ethiopia.

ADDIS ABABA UNIVERSITY

COLLEGE OF DEVELOPMENT STUDIES

CENTRE FOR REGIONAL AND LOCAL DEVELOPMENT STUDIES

This is to certify that the thesis prepared by Jemal Abdo, entitled: "**Analysis of Malt Barley Value Chain Finance: A case of Lemu Bilbilo District, Arsi Zone"** submitted in partial fulfillment of the requirement of for the degree of Masters of Art in Regional Local Development Studies complies with the regulation of the University and meet the accepted standards with respect to originality and quality.

Submission approved by:

Chairperson	Signature	Date
Internal Examiner	Signature	Date
External Examiner	Signature	Date
Advisor	Signature	Da

ACKNOWLEDGMENT

Many people have given their knowledge, time, resources and offered me lots of support to the finalization of this thesis. First of all, it is with genuine gratitude that I acknowledge the help of my thesis advisor MuluAdam Alemu (PhD) for his unreserved effort to help me write this thesis beyond graduation. Secondly, I would like to extend my special appreciation and thanks to my friend Shambachew O. Husien (Ph.D candidate at Wahgningen University, Netherland) for his consistent follow up, encouragement and willingness to offer me his time and knowledge from the inception up to the completion of this thesis.

I also, indebted to my friend Gelgelu Tusa, Buusaa Gonofa RSF Arsi Region Coordinator for his support and time. I like to acknowledge staffs of Buusaa Gonofaa MFI. S.Co Rural Service Facility of Bokoji and Lemu Bilbilo center for their invaluable support and time they rendered me during data collection, FGD interview.

Last but not least, my thanks also goes to my family, my close friends and many other who also stood by me in providing constructive suggestions to the successful completion of this research.

Table of Contents

List of Tables

Page

List of Figures

Page

Acronyms

AfD	African Development Bank
AVC	Agricultural Value Chain
CSA	Central Statistics Agency
FAO	Food and Agriculture Organization
FGD	Focus Group Discussions
FSC	Farmers Service Centre
GDP	Growth and Development Plan
IIRR	International Institute of Rural Reconstruction
KII	Key Informant Interview
KIT	Royal Tropical Institute
LF	Larger Finance
MFI	Micro Financial Institutions
MT	Metric Tone
PA	Peasant Associations
RuSaCo	Rural Saving and Credit Cooperatives
SHF	Small Holder Finance
SME	Small Medium Enterprises
SNNPRS	South Nations Nationalities and Peoples Regional State

ABSTRACT

Ethiopia is the second largest barley producer in Africa next to Morocco. Financial constraints in agriculture specifically in malt barley value chain remains outward and agricultural finance are costly and inequitably distributed, limiting producers' ability to use quality input, use machinery to produce more. The purpose of the study was to analyze malt barley value chain and determinants of malt barley value chain finance. To comprehend the objectives, data were collected from both primary and secondary data sources. Data analyzed by descriptive statistics and econometric analysis. Binary Logistic Regression model was used to analyze the determinants of malt barley value chain finance. The study revealed that, major actors in supply function of Malt Barley value chain in the study area are; Galema Union, Ethiopia Seed Enterprise, Oromia Seed Enterprises, Heineken, Soufflét malting plc, Buusaa Gonofaa MFI S. Co, Asella Malting factory, Farmer service center. Smallholder farmers, Commercial farmers, Seed producer cooperatives are major actors in production function. Respondent's access to finance for inputs was only 40% cost of production needed per hectare of land. About 36% of respondents responded that ***religious probation (riba)*** *was a major reason hindering farmers to take a loan, followed by 26% and 20%* ***Lack of guaranty/physical collateral*** *and* ***respondents do not know where to take a loan from****, respectively. The estimated odds' ratio of respondents gender, Education level 0.157and 2.22 respectively have positive effect whereas that of access to financial service and average productivity per hectare of land with 0.948 and 1.071 p-value respectively has negative effect on access to malt barley value chain finance. Microfinances, rural financial Institute involved in financing malt barley producers shall practice value chain finance approach than disbursing only cash to producers, adopting input finance, warehouse finance and facilitating market linkage. Rural financing institutions or Microfinance Association shall work on improving farmer's financial literacy, easing credit collateral requirements for agricultural and agricultural output trade loans.*

Keywords: Malt Barley, Malt Barley Value chain, Value chain Finance, Value Chain Analysis

CHAPTER ONE

INTRODUCTION

1.1 Back ground of the study

Ethiopia is the second largest barley producer in **Africa, next to Morocco**, accounting for about 25 percent of the total barley production in the continent (FAO, 2014). In Ethiopia, among the cereals, barley is ranked in the fifth place most important crop next to teff, sorghum, and wheat. Malt barley has versatile uses in Ethiopia, it is used for food like bread, other traditional dishes and for malting. Barley can grow in wide range of agro ecology with an altitude range of 1800-3400 m above sea level, but it grows best at altitudes ranging from 2300-3000 m above sea level In Ethiopia, more than 4 million smallholders produce barley and derive their livelihood from its value chain (CSA 2015). The total area covered by barley in Ethiopia is 811,782.08 hectares and total annual production of about 1,767,518.447 tons in the 2018/2019 main cropping season, in 2019/2020 main cropping season the total area covered 1,205,000 hectares and total annual production of about 2,300,000 tons. Barley is widely grown by smallholders as a staple food and as a source of cash income. It is concentrated in Oromia and Amhara regions, which contribute 53% and 30% of national production respectively (CSA 2017). In Oromia region Arsi and West Arsi Zones are the major producers of malt barley. The two zones are agro-ecologically the home of barley production in general and particularly malt barley production has been introduced to the area since very long (Tarekegn, 2016).

Despite the capacity to produce sufficient food and surplus for export, Ethiopia is a net importer of basic food necessities. Agricultural growth decelerated from 6.7 percent in 2017 to 3.5 percent in 2018, mainly due to slower growth of crop production (World Bank, 2018). This decline in agricultural growth resulted due to the fact that Ethiopian agriculture is generally dominated by smallholder, low financed and low-input-low-output mode of production. Fewer than 5% of farmers have access to improved seed which, coupled with annual soil losses estimated to be two tons per hectare, low levels of fertilizer use and limited access to irrigation, impacts negatively on small-holder productivity in moisture- and food-deficit areas.

Access to finance is a major issue to farmers/producers to use technologies, inputs, improved seeds and increase their productivity. The MFIs, largely focusing on the rural households have so far succeeded to cover about 10% of the rural households (Aderaw & Manjit, 2016). The Commercial Bank of Ethiopia has extended large amount of loans to farmers to finance fertilizer and improved seed purchase, largely on the basis of guarantees from regional governments, which in effect take the responsibility of collecting the loans and repaying the bank in the last fifteen years (SDPRP, 2002).

Getahun, (2001) has reported that the source of agricultural credit in Ethiopia mainly categorized under two main categories. These are informal and formal financial sectors such as Commercial Bank of Ethiopia, and Agricultural and Industrial Development Bank. It is estimated that approximately 1% of all farmers use institutional credit. The huge percentage of agricultural loans emanate from non-institutional sources of agricultural loans such as private money lenders, other farmers, middlemen, neighbors, friends, relatives, and merchants. However, over the decades, the percentage of farmers who have access to credit has increased to 33.3 percent, with 66.6 percent of those who were credit constrained owing to risk concerns and transaction costs (Mukasa et al., 2017).

According to Ethiopian Economic Associations, (2021) in the last two decades there have been numerous initiatives to improve the provision of agricultural finance for smallholder farmers. Many of these innovations show great promise in strengthening agricultural and rural livelihoods applicable to specific conditions of countries. Such innovations tend to combine several financing concepts, and are nearly always embedded in value chain development. These innovations tackle specific constraints in agricultural finance and reduce lending risks.

Jessop, et al (2012) describe eleven major financial innovations with the targeted financial constraints and their suggested applicability. These major financial innovations include member-owned localized finance, agricultural leasing, value chain finance (VCF), agricultural factoring, warehouse receipt finance, processors, credit guarantees, insurance (index) to support credit, price smoothing, technology (mobile banking using cell phone, mobile van); and extension services and financial literacy.

The value chain concept allows integration of the various players in agriculture production, processing and marketing. It defines the various roles of players while at the same time, scope and purpose of partnerships that can be established (Muiruri, 2007). According to FAO (2010), integration of a chain can increase efficiency and value through reduction of wastage, ensuring food safety, preserving freshness, decreasing consumer prices, and improving farmer prices and incomes. Efficient value chains normally reduce the use of intermediaries in the chain, and strengthen value-added activities because of better technology and inputs, farm gate procurement, upgraded infrastructure (such as cold chains), improved price opportunities through demand-driven production, and facilitation of more secure procurement for food processing and exports. The development of integrated value chains is recommended by the Food and Agriculture Organization (FAO, 2012) as an effective approach to secure the income of agricultural producers and their access to financing through value chain linkages.

According to KIT and IIRR, (2010) value chain finance is when one or more financial institutions link into the value chain offering financial services which build on the relationships in the chain. The seller, the buyer and the financial agent work together, using the business relations in the value chain as a carrier to provide financial services. This form of finance provides benefits for all parties.

In Ethiopia agricultural finance so far has result quite lean change on farmers inclusive access to finance, did not lead to commercialization. This study is to promote Value chain finance approach as a new financing approach to address rural finance and Agricultural finance simultaneously. The study describes the approaches for the integrated value chains as a new business model. The study also brings about the role of the value chain in promoting the rural financing deepening, innovative services to reduce risk and to improve the access to farmers/producers financial services and value chain financing tools being implemented in the study area.

1.2 Statement of the Problem

Ethiopia remains one of the highly under-banked countries, with possible effects of constraining economic growth and business development as access to financial services to the wider public remained rather limited (Aderaw & Manjit, 2016). According to Admassie (2004), lack of agricultural credit is one of the major problems that smallholder farmers are facing. Farmers require financial resources to purchase improved agricultural inputs, employ labor and implement technologies in order to increase output and income and break the cycle of poverty. Investments of farmers in these technologies cannot be realized unless organizations and systems capable of providing adequate rural financial services to farmers are in place. As a result, efforts to develop agriculture may suffer in the absence of a strong financial foundation to increase access to credit for smallholder farmers.

Similarly KIT &IIRR, (2010) revealed that Credit is essential for agricultural development and also for the development of the economy as a whole. Without finance, farmers may not be able to buy good seeds, hire workers, or invest in equipment. For traders, a lack of finance may mean that they cannot pay cash when they take delivery of the crops – so the farmers may sell their crops elsewhere. According to Samuel *et al*. (2017), farmers who have access to credit are more likely to produce malt barley which directly leads to allocate larger proportion of land.

Bedru et al. (2020) stated that, empirical evidences is lacking nature and causes of credit constraints, whether credit constraints emanate from the supply- or the demand-side, and whether credit constraints are a limiting factor for adoption of agricultural technologies such as improved seeds and inorganic fertilizers. Similarly, Empirical evidence is lacking in our understanding of value chain finance constraints and understanding that focuses more on the payments to be received from activities, such as production increase of producer's. Financial constraints in agriculture specifically in malt barley value chain remains pervasive and agricultural finance are costly and inequitably distributed, limiting producers' ability to use quality input, use machinery to produce more. Conventional finance heavily count on the creditworthiness' of the client and business. Hence conducting value chain finance analysis is vital and it will reveal whether primary producers can benefit from organizing the chain more efficiently and whether the cost of chain organization and financial services can be recovered and would help build the evidence base needed to guide appropriate policy interventions to alleviate the different credit constraints facing smallholders.

There is limited study that identifies the determinants of access to value chain finance in commercialization of smallholder's farmer's in Ethiopia in general and in the study area in particular using value chain finance analyses approach. A Value Chain Analysis of Malt Barley research conducted by Samuel *et al.* (2017) in Lemu Bilbilo District, was only focused on value chain analysis of Malt barley and not approached from value chain finance analysis perspective. This study is unique in a way that it will make analysis of malt barley value chain on one side and identify determinants of value chain finance in commercialization of smallholder's farmers on another side. It touches both value chain analysis and value chain finance analysis at the same time at production and aggregation level.

Thus, against this background, the study investigated the factors influencing the success of Malt barley value chain financing in study area using value chain finance analysis approach. This requires a comprehensive study and thorough analysis on malt barley value chain finance. Therefore, in this paper, malt barley value chain finance was analyzed with the specific objectives of identifying the main actors in malt barley value chain, mapping the malt barley value chain financial providers, determine the factors affecting the success of malt barley value chain finance in the study area and make policy recommendation for betterment of value chain finance in malt barley value chain in Lemu Bilbilo district Arsi zone.

1.3 Objectives

1.3.1 General objective

The major objective of the study was aimed at Malt barley value chain analyses, determine the factors affecting access to Malt barley value chain finance at producer/farmer level in Lemu Bilbilo district Arsi zone through the following sub objectives.

1.3.2. Specific objectives

1. To map major actors in Malt barley value chain in Lemu Bilbilo district Arsi zone,
2. Investigate the challenges and opportunities in the malt barley value chain in Lemu Bilbilo district, Arsi zone,
3. Examine the factors affecting malt barley value chain finance in Lemu Bilbilo district, Arsi zone

1.4 Research question

- What are actors playing input supplying, producing, processing, trading and retailing role in the Malt barley value chain in Lemu Bilbilo district, Arsi zone?
- What are challenges and opportunities in value chain finance in Lemu Bilbilo district, Arsi zone?
- What are major determinants of access to value chain finance in the value chain for producers?

1.5 Significance of the research

Financial inclusion is often considered as a critical element that makes growth inclusive as access to finance can enable economic agents to make longer-term consumption and investment decisions, participate in productive activities, and cope with unexpected short-term shocks (ADB, 2015). In Ethiopia Microfinance, Rural credit institutions, saving and Credit Cooperatives have been providing financial services. However, access to finance for producers, grain aggregators, and rural entrepreneurs is remained issues. There are few value chain financers from the chain actors and from outside of the chain actors but it is not widely known or typically doing value chain finance in Ethiopia. Hence, studying of value chain finance and the determinant factors of value chain finance in malt barley producing area envisage the following significances:

- It gives insight to the value chain actors like microfinancing institutions, rural saving and credit cooperatives and financial institutions regulators on what are the major actors and their roles in the malt barley value chain in the study area. It also give tangible knowledge on the determinants of malt barley value chain finance at farmers' level.
- The research inform practitioners in the malt barley value chain interested to intervene in integrating and enhancing the efficiency of the value chain through unlocking major constraints of malt barley value chain finance.
- It provide information to researchers and development planners to undertake further investigation on the role, opportunities and challenges of value chain finance at full malt barley value chain level finance.

1.6 Research scope and Limitations

1.6.1 Scope of the research:

The research was conducted at Arsi Zone Lemu Bilbilo district. The research studied value chain finance at malt barley producer finance or stallholder farmer's level. The research looked at determinants of value chain finance in malt barley value chain finance at malt barley producer farmers. The qualitative data was collected from Micro financing Institutions, Saving and Credit institutions, Multipurpose Primary cooperatives, Seed multiplication Primary cooperatives, NGOs, Union, Seed enterprises, Malt barley producer group of farmers.

1.6.2 Limitations of the research

There were limitations that challenged data collection for the research work. Covid-19 was a major constraint restricting the gather of respondents during focus group discussion and travel restriction against the covid-19 protocol. Organizing focus group discussion was challenging as the gathering of people was not allowed unless informed to local administrative to give approval case by case. The challenge was managed by implementing COVID-19 Prevention protocols, keeping distance while making FGD and organized the FGD after local administrative approval. Meanwhile Value chain Finance approach in financing smallholders is a new experience in Ethiopia; there was a limitation to accesses to empirical evidence or locally produced documents related to the value chain finance.

1.7. Organization of the thesis

The study was organized and reported in five chapters. The first chapter gives **introduction** about statement of the problem, objectives and scope of the study. The second chapter deals with **relevant literatures review**. Under chapter three, the **research design and methodology employed** for this particular research is discussed. The **data presentation, analysis and interpretation** are dealt in chapter four. This chapter also discuss about the actors in malt barley value chain in the study area, the malt barley value chain finance providers at producer level and the determinants of malt barley chain finance in the Lemu Bilbilo District Arsi Zone. The final chapter, chapter five deals with the, summary of key findings, conclusion and policy recommendations.

CHAPTER TWO

LITERATURE REVIEW

2. Theoretical review of the study

2.1 The concept of value chain Finance

The theoretical concept of value chain was coined by Michael Porter in 1985 (Porter, 1985). According to Miller & Jones, (2010) Value Chain Finance comprises the flow of credit between any or all of the agricultural finance providers, products and support services among the various value chain actors Agricultural value chains that function optimally make use of financial products that meet specific needs. Oberholster et al. (2015) have also state that credit risk is furthermore significantly reduced by the techniques used to distribute and collect funds. The relationship between the lead chain actor and the smallholder farmer can play an important role in facilitating access to financial services (Oberholster et al., 2015). FAO (2010) also defined value chain Finance as any or all of the financial services, products and support services flowing to and/or through a value chain to address the needs and constraints of those involved in that chain, be it a need to access finance, secure sales, procure products, reduce risk and/or improve efficiency within the chain and promotes financial inclusion as it offers an opportunity to expand the financing space for agriculture by improving efficiency, ensuring repayments and consolidating linkages among participants in the value chain (Swamy & Dharani, 2016**).**

Value chain mapping is the initial process in value chain analysis that aims to identify main and supportive business activities and all related components and the relationships between them in the corporate value chain (Umberger, 2014). Value chain can be mapped and analyzed using value chain analysis (VCA) which can include qualitative and/or quantitative tools. There no fixed rules an which research approach is better but there are string grounds for recommending that a qualitative approach is used first, followed with qualitative study (Hellin and Meijer,2006).

According to a publication by KIT and IIRR (2010), in general, there are three types of finance for the actors in the value chain:

Chain Liquidity: Short-term loans from suppliers or buyers within the value chain called **trade credit**, or **chain credit.** They may be given in cash or in kind. The objective is to ensure a smooth flow of products, keep the chain running and maintain long-term relationships between trusted business partners. It is usually based on trust and size is small, low cost and efficient, low risk, tailored, etc.

Agricultural Finance: This is when an outside agent, an MFI or Bank offering specialized financial services to an actor in the agricultural value chain. This is what sometimes is called **external finance**. Agricultural finance may take various forms and targets different actors in the chain. It includes loans, deposits and insurance. These specialized financial services are longer-term than services falling under chain liquidity. Also, they involve larger amounts of money, they are more transparent, and the risks of exploitation are considerably less. Some of the limitations of this are lack of flexibility, bankability of small business, inadequacy of formal finance, and lack of access, etc.

Value Chain Finance: Value chain finance is when one or more financial institutions link into the value chain offering financial services which build on the relationships in the chain. The seller, the buyer and the financial agent work together, using the business relations in the value chain as a carrier to provide financial services. This form of finance provides benefits for all parties.

Miller and Jones (2010), has also defined Value chain Finance modality as: product financing, receivables financing, physical asset collateralization, risk mitigation and structured enhancements finance.

2.1. Malt barley producers financial need

Access to finance remains a major challenge for smallholder farmers in most developing countries like Ethiopia. Because smallholder farmers cannot afford yield-enhancing inputs, farm productivity often remains low on smallholder farms despite available technology for achieving higher yields. However, smallholder farmers also face major difficulty in accessing post-harvest credit, leading to severe household liquidity constraints which often compel them to sell the bulk of their produce at harvest when prices are extremely low (Aderaw Gashayie & Manjit Singh, 2015). Jessop et al (2012) identified constraints of agricultural finance: high delivery cost, proximity; weak farming practices and farmers; lack of banking technology; lack Collateral; exogenous risks; Government intervention; weak collaboration among farmers. According to Aderaw etal, (2015) in Ethiopia creating agricultural financial access for smallholder farmers by mitigating these constraints it has evolved from agricultural credit era (1950 - 1985) to donor microfinance era (1980 to 2000) to commercialization of MFIs (2000 to present) to value chain finance (2005 to present).

Most farmers have faced financial resource constraints during the production season, they often lack working capital to buy seeds and other inputs, or to hire workers to plough the land, sow, irrigate, weed and harvest the crop and to care for the animals. Especially in the months before the harvest, many farm families cannot even pay for food, household expenses or medicines. In addition, few farmers have investment capital to buy equipment such as ploughs or draught animals, or to invest in irrigation, terracing or farm buildings. So the farmers' finance needs include loans to pre-finance the crop, and prompt cash payment for their crops after harvest (or even beforehand) (KIT &IIRR, 2008).

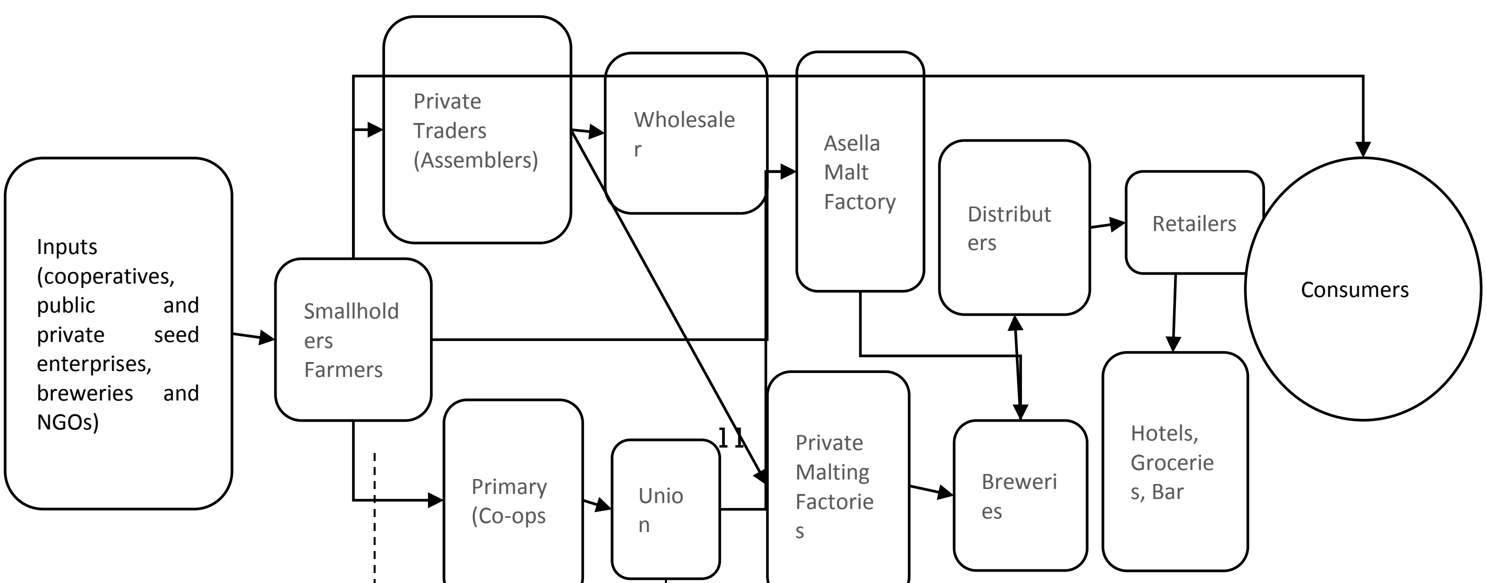
Farmers can turn to few options for money. They have seen as a bankable, and even if they do qualify for credit, the bank is a long way away, bank procedures are lengthy, and repayment systems are strict. High interest rates and transaction costs are other reasons for not knocking on the bank's door. Informal loans from business partners within the chain are often cheaper and more convenient – although they are short-term and provide small amounts, so are not enough to make investments that do not pay off immediately. Informal loans are not always convenient, for example, moneylenders can lend money to farmers at excessive interest rates (perhaps 100%), putting farmers in a vicious debt-cycle (KIT & IIRR, 2010).

The poorest families in developing countries have limited access to formal financial services, including credit, savings, and insurance (Bauchet et al., 2011). Lack of credit constitutes a critical constraint to the adoption and use of improved inputs and modern technologies of farming (Mpuga, 2010). Therefore, the poor family rely on a variety of informal credits such as local moneylenders, relatives, friends, or merchants. These options are, however, not ideal as they tend to be expensive and unreliable. This is largely because banks and other formal financial service providers, such as insurance companies, traditionally have not considered the poor a viable market and penetration rates for formal financial services in developing countries are extremely low. Apart from the rural poor (smallholders outweighs more), women are the most neglected group from the services of financial institutions. The inability to acquire formal credit support has constrained the capabilities of poor farmers' and women to expand their production and improve their living conditions, technology adoption, nutrition, and health (Bauchet et al., 2011) since the reach of MFIs to the very poor rural poor and women is limited (Beklentİlerİ & Alemu, 2018) and thus, women tend to rely more on informal credit sources than their male counterparts (Gurmessa & Ndinda, 2017).

2.2 Malt Barley Core Functions

A Malt barley value chain consists of all stages of a technical production process as well as of the interaction between these stages. Malting barley production requires key inputs to grow, notably seed and fertilizer, agrochemicals mostly supplied to smallholder producers. The supply done through different actors involved in input supply. The production process starts at the stage of input supply, than covers production, Trading, Wholesaling, processing, marketing distribution and ends with the consumption of end product. Private traders operate in growing areas and buy from smallholders who are not members of PCs, as well as from those who are members of PCs but who prefer to sell to traders. The PCs sell to a Federal Co-operative Union (FCU), to traders or direct to brewers. Unions can sell to wholesale traders, brewers or a malting factory (BIF, 2006).

Figure 2.2 Malt Barley Value chain Core function



Source: Adopted from DFID, 2006

The core functions of the value chain has horizontal interaction with Value chain supporting functions and with enabling environment or ruling functions. The supporting function play the supportive role in the chain in facilitating supportive service so that the core function will increase the effectiveness and efficiency of cash flow and goods flow in the chain, while the enabling environment create the regulations, rules and quality standards in which the goods and cash will be flowed.

2.2.1 The value chain Supporters

Flows of finance, information and services are not limited to the actors within a chain. Often other individuals and institutions are involved, surrounding the chain actors Chain supporters may provide various financial services to the chain actors. These supporters include moneylenders, savings and credit groups, microfinance institutions, banks, equity funds, and so on. The financial services they provide include loans, pre-financing, shareholdings, factoring, leasing arrangements, and so on. It is not just financial institutions that provide financial services; for example, an input supplier may give a farmer a loan in the form of fertilizer, in return for repayment plus interest after harvest (KIT &IIRR, 2008).

According to BIF (2006), a key focus of government and development programs in malt barley sector in Ethiopia is to promote increased production through the cooperatives to which many farmers belong. However, the evidence suggests that only a small share of traded barley is marketed via cooperatives and that many cooperatives lack the financial resources to refinance inputs or finance post-harvest aggregation. Access to finance for aggregation is a considerable constraint that limits cooperatives' effectiveness to compete with traders.

2.2.2 The Enabling/Rules function

The enabling environment consists of the critical factors and trends that are shaping the value chain environment and operating conditions, but may be amenable to change. These “enabling environment” factors are generated by structures (national and local authorities, research agencies etc.), and institutions (policies, regulations and practices) that are beyond the direct control of economic actors in the value chain. The purpose of charting this enabling environment is not simply to map the status quo, but to understand the trends that are affecting the entire value chain, and examine the powers and interests that are driving change.

2.3 Empirical Framework of the Study

This part of the study summarizes studies related to agricultural finance in Ethiopia and studies conducted in different countries which are related to agricultural value chain finance. The researcher starts reviewing empirical studies first those studies which conclude on agricultural finance increase contract farming and technological adoption and then value chain finance increase access to agricultural finance, then far along reviewing those studies which show the negative relationship of credit risk and banks financial performance. Finally, the researcher has reviewed those empirical studies with the same topic but conducted by taking into consideration external determinants of bank financial performance and also studies conducted in Ethiopia as well.

According to Gebeyehu et al., (2019) access to credit increases maize productivity by 26.6% via increasing the use of improved maize seed by 37.4%, fertilizer by 47.8% and hired labor by 33.6%. Therefore, the critical instrument to boost agriculture is to provide enough credit to farmers. Admassie (2004), reported that, lack of agricultural credit is one of the major problems that smallholder farmers are facing Farmers require financial resources to purchase improved agricultural inputs and farm implements in order to increase output and income and break the cycle of poverty. Investments of farmers in these technologies cannot be realized unless organizations and systems capable of providing adequate rural financial services to farmers are in place. As a result, efforts to develop agriculture may suffer in the absence of a strong financial foundation to increase access to credit for smallholder farmers.

A literature review conducted with the title of Farmers' Access to Agricultural Credit in Ethiopia reported that, Age, gender, family size, number of livestock owned by the farmer, distance of credit institution from farmer house, educational attainment of the farmer, and family size and income level are commonly regarded as factors influencing agricultural credit access in Ethiopia (Urago and Bozoğlu 2019).

Access to finance remains a major challenge for smallholder farmers in most developing countries like Ethiopia. Because smallholder farmers cannot afford yield-enhancing inputs, farm productivity often remains low on smallholder farms despite available technology for achieving higher yields. However, smallholder farmers also face major difficulty in accessing post-harvest credit, leading to severe household liquidity constraints which often compel them to sell the bulk of their produce at harvest when prices are extremely low (Aderaw, 2005). Commercially oriented farmers focus on maximizing profits, generally purchase agricultural inputs as well as household food, and tend to specialize in crops that complement each other in terms of land rotation, the machinery used, marketing seasons, etc. In the same fashion, Schneider and Gugerty (2010) stated that, Commercialization production can allow households to increase their income by producing output with higher return to land and labor and by giving them the opportunity to use the income generated from sales to purchase goods for consumption. In contrast, subsistence farmers produce food for self-sufficiency, generate most of their own agricultural inputs (seed, fertilizer, labor and capital) and produce a broader mixture of crops for household consumption (FAO, 2014). According to (Gebremedhin et al., 2009), access to input supply and services, reduce transaction costs, access to input supply and services, access to output markets and access to finance are the main determinants of smallholders farmers commercialization.

The research work of Ganewo et al. (2020) reveled that credit obtained either from formal or informal sources could be used for daily labor. The odds value showed that as compared to those farmers who do not receive credit, credit users have 2.56 units better probability of participating in contract farming. Credit use significantly influences at a 1% level of significance. Based on the findings, it is better to boost access to credit services for malt barley producers to improve their status in contract farming.

2.4 Knowledge Gap

A review of the literature indicates that only a few studies have been undertaken by using value chain finance analyses to examine the factors affecting access to agricultural finance for malt barley value chain producers. Moreover; this study is imperative by testing both internal and external factors and analyze the effect of those variables on malt barley value chain at producer level. This supports the researcher to evaluate from different perspectives. Therefore, this study is expected to contribute to the literature gap on the subject matter by expanding the independent variables and also taking into consideration of the external determinants malt barley value chain finance. In the context of Ethiopian rural finance, a value chain finance is a new phenomenon and very little about value chain, finance known and limited literatures are available in this regards and this paper will serve as referencing for the researchers in the area of study.

2.5 Analytical Framework of the Study

The analytical frame work has two parts: first, a malt barley value chain mapping analysis was performed to assist in the creation of flowchart diagrams, building on the drafts from the KIIs. This step allowed the creation of mapping profiles for different malt barley value chain functions, value chain actors and the role those actors has played in core functions, supporting and enabling functions of the value chain. These showed the actors involved, flow of core functions starting from inputs supply, Production, Aggregation, and Processing, retailing to end consumers.

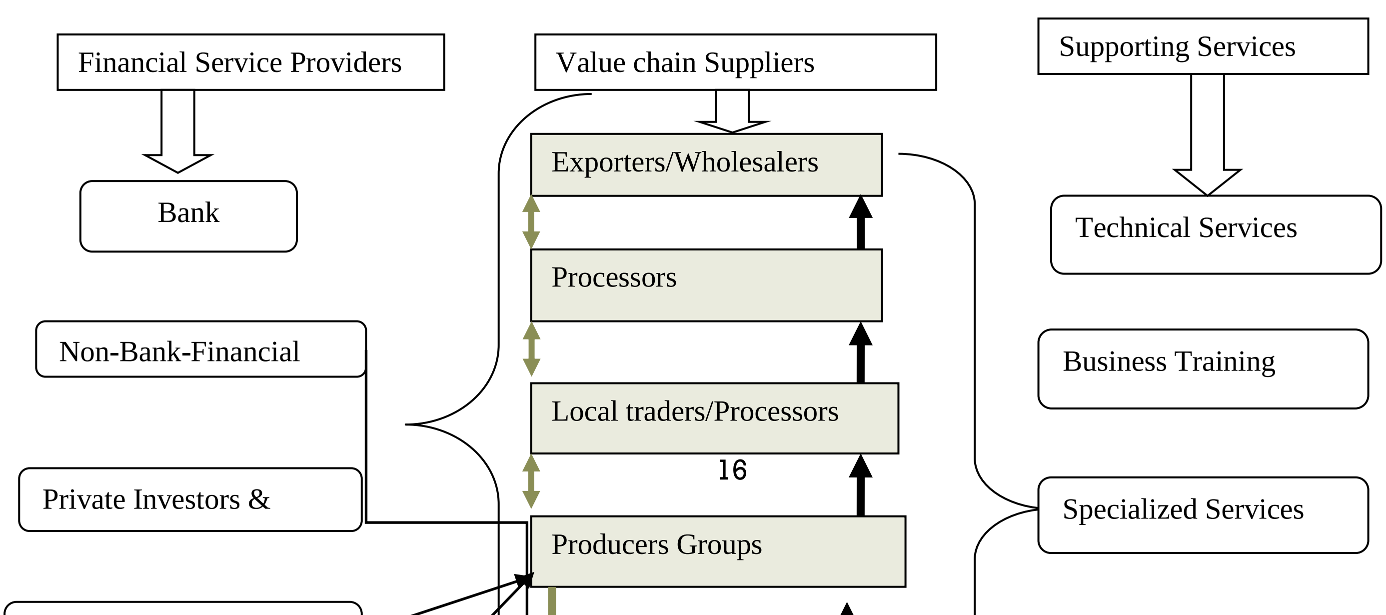
Secondly value chain finance analysis tool was adopted and employed to identify the value chain finance providers in the value chain, the value chain financing tools being employed by the financers, factors affecting smallholder farmer's access to value chain finance. In value chain finance, actors within the value chain can play a direct role in financing other actors and/or an indirect role in facilitating loans from financial institutions by lowering transaction costs and repayment risks. The tools used to prompt questions that lead to a better understanding of actors' constraints and the potential roles they may play in bridging financial gaps. Value Chain finance Analysis identify the financial products and strategic alliances that are most suited to address the financial gaps identified in the Value Chain Analysis section. In value chain finance, strategic alliances are typically established between financial institutions and value chain actors to reduce transaction costs and lower risks that otherwise impede actors' ability to access traditional financial services which is the most common ways value chain actors may facilitate financing.

2.6 Conceptual Framework of the Study

A conceptual framework is very important for understanding value chain finance. This is important because value chain finance is both an approach to financing as well as a set of financial instruments which are utilized to expand and improve financial services to meet the needs of those involved in the value chain. Figure 2.1 presents a simplified framework for understanding value chain finance. In the value chain finance is provided by those *within* the value chain itself, as well as by various types of institutional financing entities who provide financing *to* the chain. Products flow in one direction through the chain with varying levels of value addition at each level within the chain the finance flows in two directions, depending upon the particular value chain and/or region and the dynamics of the companies and participants involved.

The conceptual framework of Malt barley value chain is a network of Core function actors horizontally and a network of Supporting or Rule/Policy function actors vertically integrated with value Chain actors that are jointly aimed toward providing products to a market. The value chain includes direct actors who are commercially involved in the chain (input suppliers, producers, traders, retailers, consumers) and indirect actors who provide services or support the functioning of value chain. These include financial or non-financial service providers such as bankers and Microfinance Institutions, business service providers, Private Input Dealers, public research institutions, transportation, extension agents and NGOs.

1 ***Figure 2 1: Conceptual framework of value chain finance***



In the conceptual framework, producer level value chain finance sources are potentially form None Bank Financial Institutions, Community based credit organization, and Microfinance Institutions are involved. Input suppliers are the bottom of value chain suppliers and next are producers, group of producers while processors and wholes sellers are the last mile of the suppliers function in the value chain. The bottom of the pyramid often interact vertically and horizontal and also with Supporting and Financial service providers. Practically the bottom of financial service providers part often provide financials service to the bottom actors of the suppliers functions of the value chain while the rivers applied for the both financial service providers and Suppliers functions interacts frequently in horizontal interaction. This indicate Banks are involved in financing the processors and wholesaler sin the value chain of the malt barley.

In the same manner, Microfinances, Community organizations are the potential financial service providers for the malt barley producer’s stallholder farmers. Banks do not have interaction horizontally with producers or stallholder farmers according to the conceptual frame work.

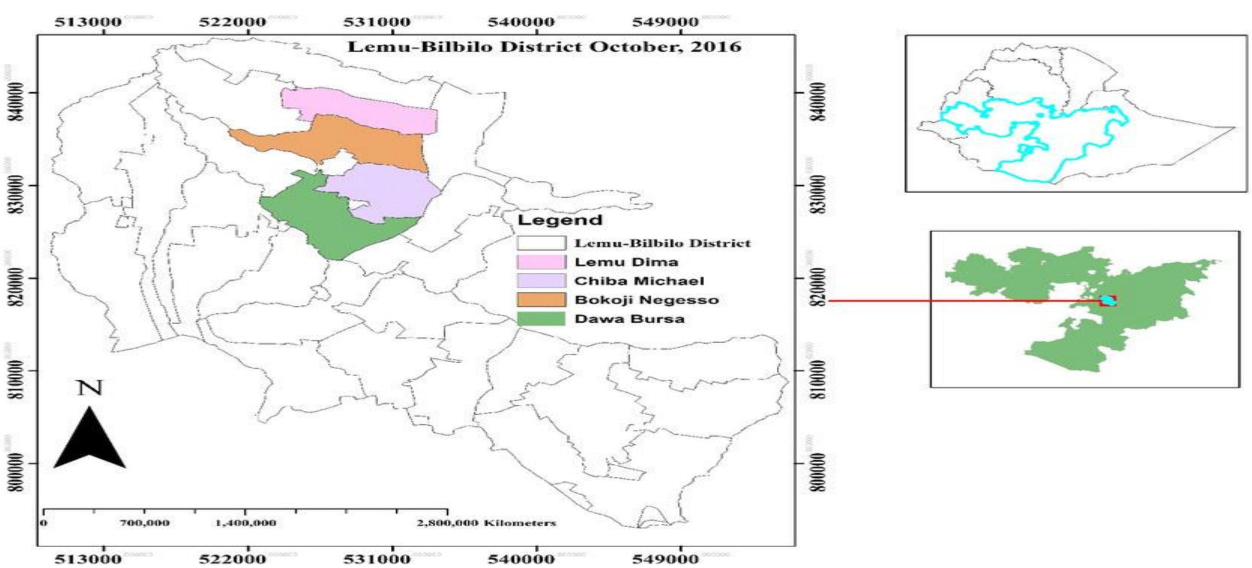
CHAPTER THREE

METHODOLOGY

3.1. Study Area

The study area Lemu Bilbilo a districts found in Arsi zone of Oromia Region is located at Latitude of 7.6 North, Longitude of 39.19 East and Altitude range between 2,000 to 2600 m.a.s.l (Figure 3).The district has mean annual rainfall of 700-1800 mm and have favorable weather conditions for crops like malt and food barley, fava bean, field pea and wheat. Most land is allocated to food crop production and hence the major share of livestock feed is obtained from crop residues (WoARD, 2020). The study area, Lemu Bilbilo district, is the major barley producing area in general and malt barley in particular which contributes about 25.2% of total barley production of the zone. The total land used for malt barley was about 8,937 hectare where the production was about 367,450 quintal with 1,900 Ethiopian birr ETB/quintal) average price. Majority of the production sold to the Asella malt factory and beer factories in the country through Primary cooperative and private seller.

Figure 2: Map of the study area located at Oromia National Regional State, Ethiopia



Source: Adopted from Woldey 2014

3.2. Research Approach

The research employed mixed research methods to analyses qualitative and quantitative data and data collected from Key informant interviewees.

3.3. Population, Nature and Source of Data

The population of the study was malt barley value chain actors at producers and aggregators level of malt barley value chain, Rural financing institutions, Cooperatives. The producer and traders has heterogenic characters in terms of their land holding, farming practice and buying and aggregating capacity.

The nature of data was both primary and secondary data. Secondary data was collected from Financing Institutions, Private malt barley grain Traders, Primary cooperatives, Unions and Household farmers producing Malt barley. At the household level, information was collected on sex, age, farming experience, level of education and house hold size of the respondent. Data on land size allocated to malt barley production, Cost of production per hectare, Average sells of malt barley produced and their market (where they sold their produce), was also collected. On finance aspect, their access to in kind finance in last 12 months, Finance source, Loan purpose, Current Loan Amount, Loan term, Collateral type they have pledged and of those who didn't access to finance why they didn't access to finance was collected.

3.4. Data Collection Methods

Data were collected using both qualitative and quantitative methods. Primary and secondary data sources were used to collect the information. Data were collected from participants using structured questionnaire, focus group discussions (FGDs) and key informants (KII). To gather the information from the respondents, face-to-face interviews were employed using a structured questionnaire. Interviews were conducted in a convenient time at end of harvest and on the time marketing activities were in progress so that farmers were able to remember their most recent production per hectare and cost of production and the price they sold at. The survey was conducted from December 7-December, 25 2020. Two enumerators, one per Kebele who had local knowledge and language were recruited and trained. The trained enumerators, under the supervision of the researcher, interviewed those sampled farmers.

3.5. Sampling Procedures and Sample Size

This study was designed to be carried out in potential barley producing areas of Arsi highland in Ethiopia. Both purposive sampling and random sampling procedures were used to select the respondents using three stages. In the first stage, Lemu Bilbilo district was purposively selected from the potential barley producing districts of the Arsi zone in terms of Malt barley producing Potential. In the second stage, two Kebele were purposively selected from each of the selected districts in consultation with Micro financing Institution staffs with the major criteria of large area coverage and more potential of barley as cash crop than other crops. Accordingly, Sirbo Badiya and Koma Katara Kebeles from Lemu Bilbilo district were selected. In the third stage, 67 respondents Sirbo Badiya, 72 respondents from Koma Katara were selected using random sampling technique, thereby making a sample of 139 respondents. Yamane (1967:886) provides a simplified formula to calculate sample sizes. Lastly, Yamane (1967:886) formula was used to calculate a representative sample size at 91% confidence level with degree of variability 0.09 and level of precision 0.09 (margin on error) as: $n = \mathrm{N}/(1 + N(e\^{}2\ )\ )$

Where n is the sample size, (N=3750) is the total population size (total household head size in the study kebeles), and e is the level of precision. Since the numbers of farmers in each sample kebeles were different, specific numbers of respondents were selected with probability of proportionate to sample size (PPS) using random sampling technique to ensure representativeness of the population (Table 1).

Kebele/pa	**HH number**	**Total Sample distribution**	
	Total HHs	Number	%
1. Sirbo Badiya	1,450	67	48
2. Koma katara	2,300	72	52
Total	**3,750**	**139**	**100**

Table 1: Number of respondents per Kebele,

One FGD per Kebele of 8 members per group One at Sirbo Badiya Buusaa Gonofa RSF office and One at Buusaa Gonofaa RSF Meraro office were conducted. Key Informant Interview was conducted with 6 staffs from two Micro financing Institutions (Buusaa Gonofaa RSF and Harbu MFI S.Co. Two Primary Cooperatives Mangers and Committees in total eight interviewees, five

Private traders at Meraro small town, one from Galam Union Manger, one from Souflet Malting Company field Marketing agent at Bokoji, 1fromOSeed Enterprise Asella Branch (Managing Director) and one From Asella Malting Factory.

3.6. Method of Data Analysis

After the required data was collected, the data was edited, coded and entered into the computer system. The data gathered through questionnaire was analyzed using statistical package for Social Science (SPSS) version 20 computer software. Descriptive statistics such as frequency, mean, standard deviation, and percentages were used to analyze the data collected through questionnaire. Whereas the qualitative data collected through focus group discussion, key informant interview and case study of Main actors in malt barley value chain and malt barley value chain financial providers were analyzed with standard value chain analysis flow graphs, descriptive analysis and form of narration.

Data collected determinants of access to malt barley value chain finance of the producer in the study area were analyzed using descriptive statistics such as means, percentages, tabulation, ratios and frequency distribution.

A binary logit model which according to literature best fits the analysis for determinant factors that affects smallholder farmer's access to formal credit was employed (Yehuala, 2008). The generic form of the logit model as presented by Mohamed (2003) is; $logit\ P(Y) - \beta\varphi + \sum \beta i X i + \mu$ were used.

Y=$\beta\varphi + \beta i X i \ldots\ldots\ldots + \mu$ (The specific model for this study will be modified based on selected determinants of access to value chain finance).

Where Y = In kind Loan access, Xi = determinants of credit access, $\beta\varphi\beta i$= coefficients, μ = error term.

3.7. Ethical Consideration

The necessary precaution was taken to make the study ethical. Respondents were informed ahead about the purpose of the information they provide to the researcher. They were informed that the data they provide via questionnaire, focus group discussion and key informant interview was used only for the purpose of academic research and remain confidential. They were also assured that their identity remains anonymous.

3.8. Validity and Reliability

3.8.1. Validity

Validity is the extent to which an instrument measures what it is supposed to measure. Therefore, content validity and concurrent validity of the research has been checked. For example, content validity means the data collection tools must cover all possible aspects of the research topic. Hence, ahead of the main data collection process started, ten pilot questionnaires have been done with the households so as to check content validity of the questionnaire. Based on the pilot questionnaire feedback the pre-prepared questionnaire was revised because of redundancy of the question. In addition, concurrent validity has been checked through finding in another research the finding of this research. Therefore, the finding of this study had also supported by the finding of another research done earlier.

3.8.2. Reliability

Reliability of the study was done using Cronbach's Alpha which measures the internal consistence of the study. Therefore, based on the Alpha value threshold of 0.7 which was checked whether the internal consistence of the study was reliable or not (Taber, 2016). Because the reliability value of the study was (α=0.869) which exceeded the prescribed threshold of 0.7 had made the internal consistence of the study was reliable as indicated in Table 2: Reliability Statistics.

Cronbach's Alpha	N of Items
0.869	6

Table 2: Reliability Statistics

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

This chapter presents the results of the study. Descriptive analysis is employed to describe the demographic characteristics of sampled malt barley farmer households. Value chain analysis presents value chain analysis of malt barley which includes value chain actor's mapping and the role actors played in the malt barley value chain, challenges and opportunities along malt barley value chain, marketing channels, Malt barley value chain finance, financing source to Malt barley producer farmer's loan size, loan purpose and the loan term discussed. Econometric analysis was employed to identify determinants of malt barley value chain finance at producer level of the value chain

4.1. Socio-Demographic Characteristics of Respondents

4.1.1. Socio-economic characteristics of sampled farm households

This sub-section explains the sampled respondent`s profile in terms of their age category, sex, family size, level of education, year of experience, land size allocated for malt barley, cost of production per hectare, production per hectare, average revenue per hectare, market destination for their grain.

Gender of household respondents: Tables 1, 2 and 3 present demographic and socioeconomic characteristics of the sample respondents. The total sample size of farmer respondents handled during the survey was 139 of the total sample respondents, 85.6% were male-headed households and only 14.4% were female-headed in the district. About 35.25%, 56.12% household heads age was ranged between 19-29 and 30-64 age groups respectively while 2.15% and 6.47% was in ran less than 18 Age and above 64 Age range respectively.

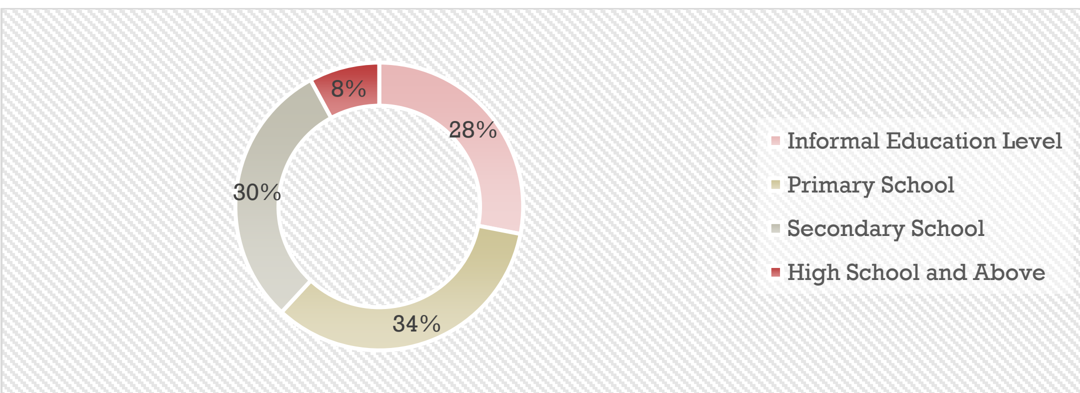
The finding indicates that more than 91% of the respondents are in the productive age category and only 8% of the respondents are unproductive age. This is an opportunity to expand access to value chain finance in the study area. Female house hold head respondents are also more than 10% of the total respondent stallholder farmers of the study area, which again give the opportunity to improve financial inclusion in the area in terms of gender.

Age Category		Frequency	Percent	Cumulative Percent%
Age category	<18Age	3	2.16	2.15
	19-29Age	49	35.25	37.41
	30-64 Age	78	56.12	93.53
	>64 Age	9	6.47	100.0
	Total	139	100.0	

Table 3: Age category of the household respondents

With regards to educational status of the household respondent's, the survey result showed 33.8%, 30.2% and 28.1% were Primary School, Secondary School and Informal Education level respectively. This shows that in the study area less than 10% of the respondents are illiterate and financial institutions can provide financial education and value chain finance market easily in the study area.

Figure 3: Education level of respondents



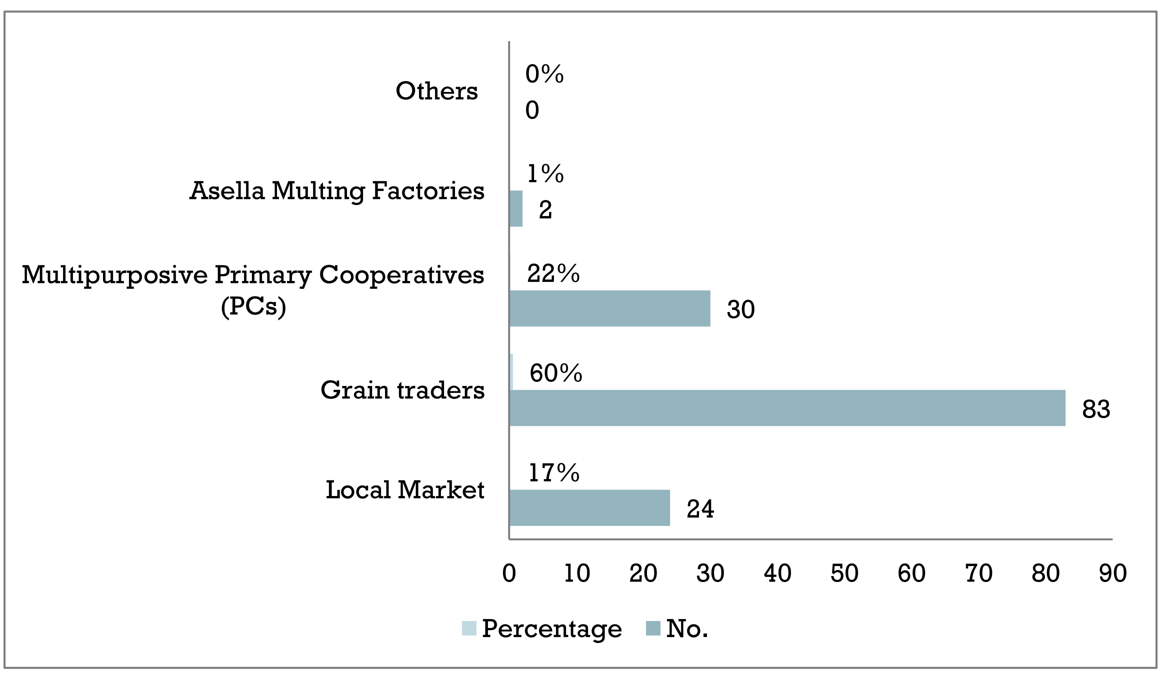
Source: Field survey, 2020

From table 4 below, the minimum family size of the households was 3; maximum was 12 with 7.15 average family sizes. The survey show that the minimum land size farmers allocated for malt barley production was 0.75 hectare with and 3 hectare maximum land size with 1.65 mean land size allocated for malt barley production. This finding was not inconsistent with the WoledeYohanis et.al. (2017) who shows the average land allocated for malt barley production is 0.44 hectare. This show the land allocated for malt barley production in the Aare is increasing over the time and malt barley is becoming the major cash crop in the study area. Average productivity per hectare was 35 Quintal with 21quantal minimum and 51quantal maximum productivity. Average Cost of production per hectare for malt barley was 22,913.99 ETB with 10,267 minimum and 39750 ETB maximum production cost per hectare.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Family Size of the respondent	139	3.00	12.00	7.15	2.13
Year of Experience on Malt Barley production	139	5	10	6.82	1.48
Land size allocated for Malt Barley	139	0.75	3.00	1.65	0.61
Cost of production per hectare	139	10267.00	39750.00	22913.99	4918.61
Production per hectare(in quintal)	139	21.00	51.00	35.1223	5.96422
Average Sells	139	40250.00	96267.00	66620.74	11156.83

Table 3: Socioeconomic character of the respondents

Figure 4: Market destiny of the Malt barley Produce



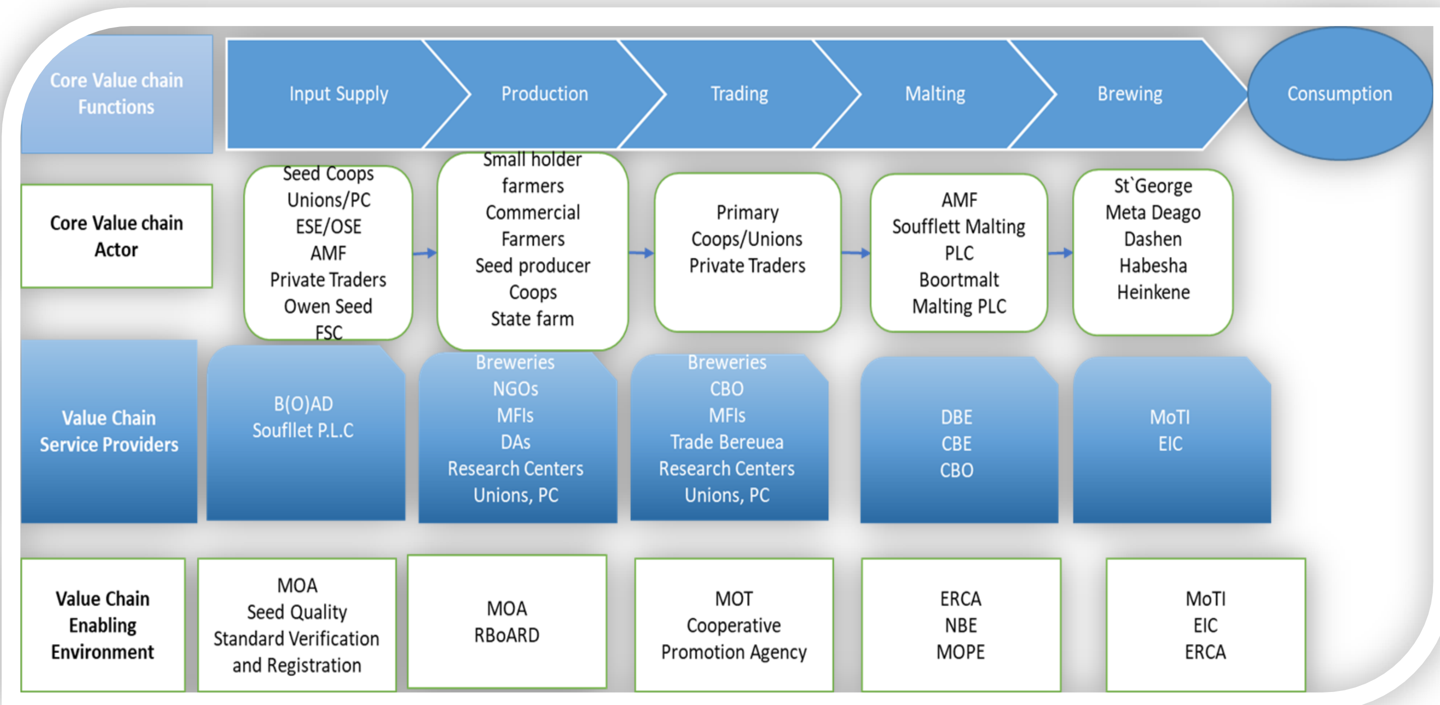
The above figure 5 shows that about 60% of the farmers responded that they sell their produce to Local grain trader, and 22%, 17% responded they sold to multipurpose primary cooperative and local market respectively. This show that smallholder farmers were not selling their produce directly to Asella Malt factory while the Wholesaler and Retailers like Grain traders, Primary cooperative do the aggregation and sell to the malting factory like Asella Malting factories and Soufflét malting and Heineken, according to discussion with key informant interviewee. According to key informant interview response, Primary cooperative`s main challenge in buying the produce were on time access to fiancé from Union.

According to the key informant interview response "traders *start buying early harvest before the Primary cooperatives access credit transfer from their member Union which is Galama Union and ready to buy the produce. The union access finance form Asella Malt factory to aggregate the malt barley grain through Primary cooperatives with fixed merging of commission. Never the less government has issued new VAT tax on sells of malt barley grain to halt abnormal competition of grain trader regarding price. The primary cooperative has no finance source for aggregation than member's contribution".*

4.2 Malt Barley Value Chain Actors

The study illustrate from value chain mapping, that major actors involved in Malt Barley value chain in the study area are; Galema Union, Ethiopia Seed Enterprise, Oromia Seed Enterprises, Heineken malting factory, Soufflét malting plc, Buusaa Gonofaa MFI S.Co, Asella Malting factory, Farmer service Centre, in supply function Whereas ,Smallholder farmers, Commercial farmers, Seed producer cooperatives in production function. Primary cooperatives, Private traders play Trading/marketing role, Asella malting factory, Soufflét malting PL.C, Boort malting PL.C in malting function and St` George, Meta Deago, Habesha, Heineken in Brewing/processing function. The main value adding activities undertaken at each stage of the chain were transporting, sorting and packaging, filtering and processing.

Figure 5: Malt Barley Value chain map



4.2.1 Malt Barley Input Supply Actors

According to the study, the main inputs used in MB production include land, labour, seed, fertilizers and chemicals. The main important inputs for which MB farmers require are improved seed, fertilizers and agro chemicals, which are supplied from external sources. There are different structures in how these different inputs are supplied to the malt barley producers by external parties. For example:

Improved Seed suppliers: According to respondents, they get seeds either from MFIs in credit, from malting and **brewery** companies through unions and cooperatives for the member on partial payment, and also they get it through nucleus farmers and traders on cash with informal agreement to sell back the produce finally. Except from MFIs seed sourcing, all other sources have either formal or informal agreement to sell back the produce to the seed source. Oromia Seed Enterprise and Ethiopian Seed Enterprises are the major primary seed sources which distribute to other actors back after certifying the seed quality and its germination rate.

According to Key informants, private seed producers, Seed multiplying primary cooperatives, Model farmers and Government owned Seed multiplication farms are among the primary seed multip layers taking the pioneer seed from Henkien /Soufflét Malting Company or ESE/OSE companies. The multiplied pioneer seed will be collected as per the contract farm agreement certified and redistributed to distributors by Ethiopian Seed Enterprise or Oromia Seed Enterprise. The improved seed distributers are: MFIs to their client, Primary cooperatives to their member and other farmers, Malting companies through their dealers, private traders and model farmers. Respondents said that, Seed distribution has both partial payments, fully in kind credit, and full payment distribution modality depending to distributing body.

Chemicals and Fertilizer suppliers: Different agro-chemicals such as herbicides, anti-rusts and other disease control chemicals are accessed mainly from local traders who are usually residing at zonal and woreda towns, rarely it is supplied by cooperatives and unions, and sometimes from malting and brewery companies. Buusaa Gonofa MFI S.Co Rural service Facility unit also provided Chemicals in credit for their clients who have taken improved seed in kind credit at their branch level according to the respondents. Therefore, the major sources of inputs for MB production are local traders, primary cooperatives, unions, Buusaa Gonofaa MFIs in the study area. Inputs like improved seed distribution passes minimum through three hands: from companies to unions/MFIs then to coops or to farmers.

According to focus group participants responses, major input supply function actors are Private traders, Multi purposive primary cooperatives, Soufflét malting company, Assela malting factory owned by Oromia farmer's federation, Heineken malting company and Microfinance. The roles and functions of the input supply actors discussed as follow;

Traders: Traders are major actors of the value chain and play input supply role and marketing role as well**.** Traders supply chemicals sourcing from different chemical importers like Lion international plc. Makanba, Makobo, Chemtex and others, these include herbicides, fungicides, pesticides, and some also supply spray equipment and protective devices related to spraying of chemicals. While some traders are licensed others are not. The following is a case study of one private chemical supplier trader in Asela Town, Arsi Zone below to show how he does his business.

Multipurpose Primary cooperatives: According to the survey, fertilizers like Urea and DAP and rarely chemicals have been distributed by unions through primary cooperatives for production of any cereal crop or vegetable. In this case, farmers pay in cash to the coops to buy them. Their sources of finance have been from MFIs, their own resources, or borrowing from different informal sources. But in the case of MB, in addition to the usual input sources and distribution channels, breweries and malting companies like Soufflét Diageo, AMF have been distributing inputs to MB producers either directly through primary cooperatives, nucleus farmers, and traders or through a bit longer channel, through unions and then channeled through primary cooperatives then to MB producers. Currently Soufflét is the only company that has been directly working through traders and nucleus farmers to distribute inputs to MB producers. The main objective of this arrangement by the companies is to secure bulk supply of MB produce through contract farming. However, so far it has been difficult to enforce these contracts especially at farmers' level and they don't also replace collaterals. After accessing inputs from the companies though different channels, farmers commit themselves to supply MB produced.

Soufflet Malting PLC: Soufflét is a malting company based in France. The company lately takes the roles Heineken has been playing in Malt barley Value chain like distributing the improved seed through traders, Primary cooperatives, Microfinance to the farmers with agreement to off take the malt grain at harvesting time. Soufflét also play a role of capacity building of coops and unions. This include on good agricultural practice. Soufflét has also demonstrated a new malt barley seed variety called Fatuma and also disseminate the variety that has been in the sector for last five year called Traveler introduced by Heineken. The malting plant in Addis Ababa`s Lemi Industrial park, is expected to produce110, 000 metric tons of malt annually.

Asella Malting Factory: Similarly, Asela Malting Factory (AMF) is one of the leading companies in MB marketing and the only malting factory in the country. The company works with unions that include Galama, Raya Kajawa, Hitosa, DuroAwaro, and UtaWayu, with respectively 30, 20, 7, 4, and 15 cooperatives under these unions. Furthermore, it directly works with about 30 cooperatives on MB marketing. So, for the targeted farmers under these coops, AMF provides different services and supports as long as they are ready and willing to work under contract farming.

EUCORD: EUCORD is an NGO working on Community Revenue Enhancement through Technology Extension project on development works in this study area. Inthe study area it has been providing different support for MB producers through farmers' organizations, traders, nucleus farmers, and MFIs for free by organizing farmer's day.

Heineken malting company: Heineken has been supplying MB seed; agro-chemicals, that includes herbicide, fungicides, and insecticides; and financial supports. Input distribution is through model farmers, MFIs, coops, traders, and commercial farms. Inputs were distributed on credit.

Micro financing Institutions-: In the study area, Buusaa Gonofa Microfinance Institution has been playing input financing role for stallholder's farmers in malt barley value chain finance**.** Buusaa Gonofaa microfinance provides financial services through Rural Financial Service unit located in Meraro small town. Rural Service Facility is a community lead branch of Buusaa Gonofa where Lending committee are recruited from community and manage the client screening, loan disbursement and repayment operations. In addition, in the same areas it has Rural Unit Coordination Office (RUCO) that supervises and operates through RSFs in both regions. The rural service facility plays input sourcing, financing in kind and managing the repayment of the loan after the harvest time. This kind of valuechain financing model is called input financing

4.2.2 Malt Barley Production Actors

In malt barley value chain two production actives were carried out by actors. The first one was pioneer Seed multiplication actives and the second one was malt grain production. According to the survey result, Farmers are the key actors who are directly involved in malt barley grain production activities and perform most of the value chain functions starting from farm inputs, preparation of their farms or gaining of the inputs from other sources to post-harvest handling and marketing. Never the les, few farmers were involved in seed multiplication and seed multiplication primary cooperatives, Private seed multiplication enterprises, State owned farms were the major improved seed producers. The major farming and value adding activities which are performed by malt barley producers include ploughing, sowing, fertilizing, weeding, pest/disease controlling, harvesting and post-harvest handling (cleaning). The larger quantities of malt barley are sold during and soon after the main harvest season to cooperatives, local traders/collators, grain wholesalers, union, and malt factory and to consumers of the area within the same production year.

4.2.3 Malt Barley Aggregation/Marketing Actors

Malt Barley produced by the farmers in the study areas is aggregated and supplied to the processing companies by different parties. These include multipurpose primary cooperatives, traders, MFI groups, and unions.

4.2.3.1 Primary Cooperatives

According to the study result, primary Cooperatives act as major actors of malt barley value chain that has a stabilizing role in the local market through purchasing the product. In the study district cooperatives purchase malt barley from members and non-members and sell it to malt barley processors (Asella malt factory) with premium price of 5.5 % to local market price and pay to the producers through the Union by subtracting their commission. After all cooperatives purchase quality malt barley from both members and non-members by competing with local traders, they stock up all in warehouses and transfer bulk of malt barley to Asella malt factory and to their union. The exchange activity of the commodity between producers and primary farmer`s cooperative is performed only based on observation of physical quality of the produce without using any laboratory test. Because of this, the same level of malt barley is given different prices. At similar purchasing time purchasing capacity of the primary cooperatives is not as fast as private traders. As a result, including members of the primary cooperatives sells their produce to private traders less than the price Primary cooperatives could buy it. This happens due to lack of sufficient cash on hand by primary cooperatives to buy the grain on time and poor business orientation of the committees. While some of the cooperatives in the study areas, who are financially strong like Siltana mentioned below, are very active in the marketing of all the grains produced in the area.

4.2.3.2 Galema Union

Galama Union is one of the actors involved in malt barley value chain in the study area. Currently, Galama union playing the role of purchasing and supplying agricultural inputs based on input demand from primary cooperatives which distributes to the farmer, grain marketing by creating linkage with farmers through cooperatives, and sell to processors, malt factories and breweries (Asella Malting Factory, Meta Diageo and Heineken beer factories). Asella malting factory also provide training to farmers who are members as well as non-members of cooperatives. Never the less, in the study area most of primary cooperatives like primary cooperatives has weak relationship with Union as result of past overdue of fertilizer money primary cooperatives sold to its member. Some of primary cooperatives are unable to access credit from Banks like Cooperatives Bank of Oromia unless they clear the default they have with Union.

4.2.2.3 Rural Collectors/Private Traders

In the study area, Traders are major actors of the value chain playing marketing role**.** Rural Collectors are also actors in the malt barley value chain. These are traders or farmer/part-time traders who collect grain from small rural markets in the kebeles and from meraro market, and sell to grain wholesalers. They collect and transport grain from inaccessible or distant markets for re-selling it to grain wholesalers by negotiable price without considering the quality of malt barley. The value adding activities of collectors include purchasing, assembling and selling to rural grain wholesalers. Survey result indicates that about 20 grain wholesales are found in Lemu Bilbilo district which are licensed by trade and marketing sector of the district and the number varies including those who don’t have trade license but do marketing activities. The district is the main assembly center for malt barley grain wholesalers from their surrounding kebeles. Majority of grain wholesalers have a warehouse, either owned or rented. These are suppliers of bulk of malt barley to the processors (Asella malt factory). Grain wholesalers are mainly involved in purchasing malt barley from local collectors and collect directly from producers in larger volume and then transport it by lorry or truck to processors (Asella malt factory) through their brokers/middlemen and some part of it to the brewery (Meta Diageo).

4.3 Challenges and Opportunities in Malt Barley Value Chain

In addition to lack of access to finance, the major challenges mentioned by agro-chemical suppliers include:

Core Functions	Challenges	Opportunities
Inputs supply function stage	✓ The malt barley seed quality is poor ✓ Shortage of chemical supply and high price of chemical inputs like herbicides and pesticides Involvement of illegal and unlicensed chemical suppliers. ✓ No proper Chemicals storage ✓ Malt barley seed was mixed with poor quality seed	✓ High demand for quality improved varity seed, chemicals ✓ High demand for agricultural inputs, ✓ High demand of extension services ✓ Expansion of seed supplier cooperatives in the study area
Production function stage	o The producers have Poor linkage with other value chain actors o Low price of product, high price of inputs o Lack of capital to purchase inputs o Higher market distance o The malt barley grain storage facility was not up to the standard to maintain needed moisture of the grain o The extension services and credit service for producer was low,	o Favorable climatic conditions and fertile land for malt barley production presence of value chain supporters and enabling policy environment and support from public organization and NGOs, o High demand for malt barley by different factories, its potential for value addition possibility of farming advice

marketing/ Trading	➢ Malt barley grain quality problem specially the traders punch-up the different grain quality grades to gate better average price ➢ Presence of unlicensed traders, , ➢ Multipurpose cooperatives purchasing capacity was limited due to low financial liquidity, ➢ Most of Cooperatives cannot access a loan from banks as the overdue fertilizer default credit history of PCs bloke them from accessing the loan, ➢ Lack of appropriate storage facility for malt barley, ➢ Lack of on field grain grading system in the value chain that helps producer to fetch better price according to their grain quality	➢ High market demand and availability of buyers, ➢ Expansion of breweries in the country, ➢ high competition among the buyers of malt barley, ➢ Government investment on infrastructure development, ➢ Government focus on SACCOs and rural finance promotion,

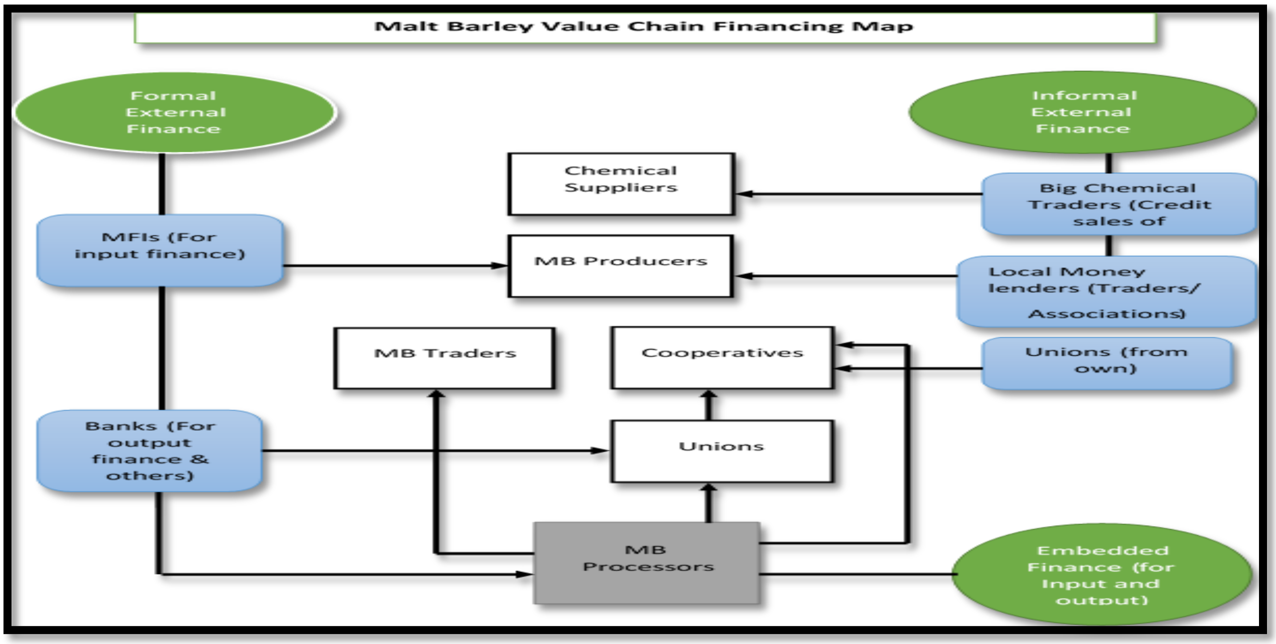
Table 4: Malt barley value chain challenges and opportunities

4.4 Access to value chain Finance

Some of the benefits that an agricultural VCF offers to smallholder farmers include the reduction of the cost and risk in financing. It furthermore offers a mechanism to improve the access to financing for smallholder farmers that, due to 1) a lack of collateral, or 2) the high transaction costs of securing a loan, may otherwise not be available (Miller & Jones, 2010).

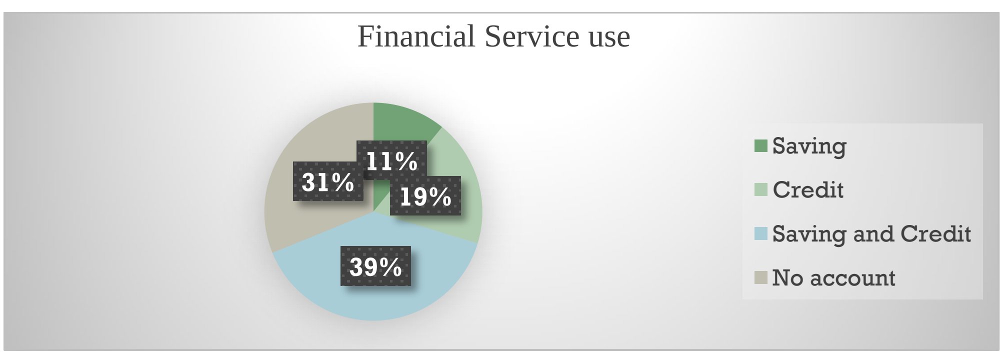
The below figure 7: shows the financial flow among the Malt barley value chain Finance mechanism. In study area the Malt barley value chain Finance source primarily for smallholder farmers are Micro Finance in the form of In kind Input finance(Improved seed, chemicals and Fertilizer), Informal money lenders (grain traders, families and friends). Cooperatives Bank of Oromia also finances Malt barley processors, Unions through which that finance trigger down through Primary cooperatives to their members. Malt barley processors like Malting factors including Asella Malting factory, Brewery factories, Soufflét Malting Company are also a financing source for malt barley value chain finance. However, commercial banks are reluctant to offer credit to smallholder farmers as the collateral requirements, loan size were not affordable to small holder farmers.

Figure 6: Malt Barley value chain financing map



4.4.1 Access to Finance Characteristics

Figure 7: Financial Service use



The above fig shows the financial service use of the respondents. Accordingly, 39 % of the respondent use both saving and credit and followed by those with no account 31% of the total respondent’s.

Taken loan in-kind in last 12 month?				
		No	Percent	Valid Percent
Valid	Yes	102	73.4	73.4
	No	37	26.6	26.6
	Total	139	100.0	100.0

Table 5: Taken Loan in kin in last 12 months

The survey reviled that 73.4% of the respondent was accessed loan in kind in the form of agricultural inputs including fertilizer, improved seeds and chemicals. The survey also revealed that MFIs was the major in-kind loan source for malt barley producers in the study area

The table 7, below shows that, 96.1% of the respondents accessed finance from Micro finance and this study is also in line with the finding of Fekadeselassie (2007), that reveled, Micro finance institutions are the major supplier of the cash credit money which supplied to 95.9% of the sampled households. Microfinance are enabling environment in the value chain as it shown in the conceptual framework. Actors like Traders, RuSaCO provide credit for less than 5% of the respondents access finance. This show there is low access to value chain financing source for at producer level as Banks, Malting factories and processing plants are not providing credit for producers.

Source of loan			
		No	Percent
Valid	MFIs	98	96.1
	RuSaCO`s	2	2.0
	Traders	2	2.0
	Total	102	100.0

Table 6: Sources of Loan

The table 7, below revealed that the minimum loan amount of those farmers accessed in kind was 2,900 ETB and 19,800 ETB maximum with 8,711 ETB average loan amount. The loan was mostly accessed in kind of inputs including improved malt barley seeds, fertilizer and chemicals inputs. The loan amount farmers are accessing was far less than the cost of malt barley production amount farmers needed per hectare of land which was less than 40% of production

Statistics				
	No	Minimum	Maximum	Mean
Amount of Loan (ETB)	102	2,900.00	19,800.00	8711.76
Loan terms (Months)	102	9.00	12.00	9.32
Interest Rate (percent)	102	18.%	24.00	23.53

cost. This finding is in line with Joshua (2010) who studied an analysis of constraints facing smallholder farmers in the Agribusiness value chain in Limpopo Province and who revealed that the majority of smallholder producers experience difficulty in obtaining credit for production inputs and Almost 65 percent of the interviewed farmers indicated that they lacked access to sufficient production inputs.

Table 7: Access to finance summary statics

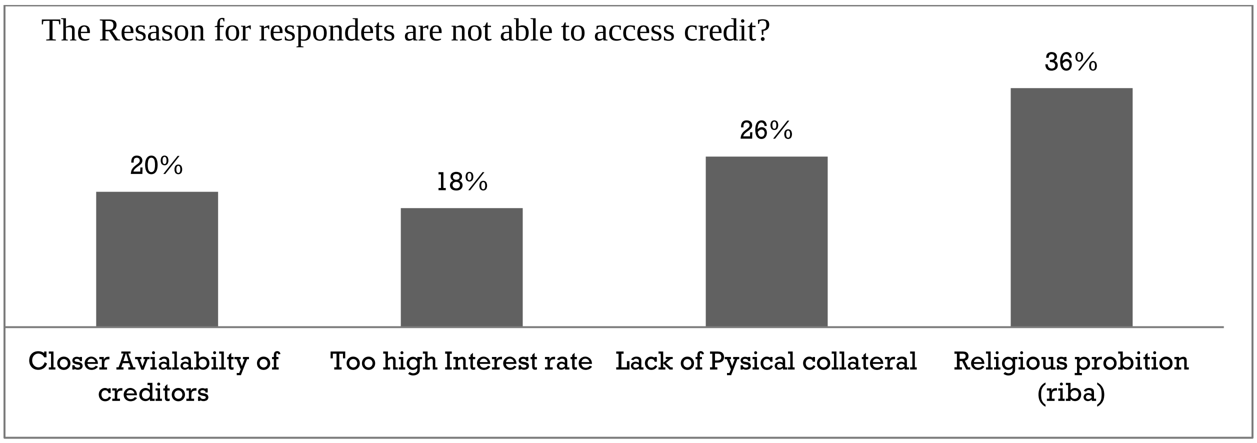
Table 8 shows that, the minimum loan term was 9 months with 12 months maximum loan term. Average loan term for in kind malt barley loan product was 23.5% per annual and 18% per annual minimum interest rate and 24% per annual interest rate. According to the survey result, 36% of respondents who didn't take a loan responded that religious probation(riba) was a major reasons not to take a loan and followed by 26%,20% Lack of guaranty/physical collateral and respondents do not know where to take a loan from respectively. This finding is constant with the study done by Fekadeselassie (2007), on Assessment of integrated Milk value chain finance in Ethiopia, that reviled "The major challenges of the household not too well participate in credit service are lack of information to the credit providing agencies, their access to the credit, the bureaucracy of the institutions and distance to the lending institutions. Farmers' perception about the importance of employing loan money for milk production and marketing perfectly increases the use of part or all of loan money for milk production".

Never the less, This finding is in contradiction with the finding of survey done by USAID (2021) in Uganda on understanding the smallholder access to finance finding that reviled the low number of agricultural loans in Uganda is at least partly due to a lack of interest or demand. Another interesting takeaway is the discrepancy between the survey responses and the reasons that are most commonly cited in the literature regarding demand for loans. According to USAID

(2021), many of the commonly cited barriers relate to high interest rates, lack of collateral or credit score, and lack of knowledge on lending which show consistency with these study findings. But about 18% of the respondents said Interest rate was too high to take a loan which is also considerable percent of the total respondents.

The figure 9 below shows the reasons why respondents who didn't took a loan in kind in the last 12 months.

Figure 8; the reason why not to take a loan



4.4.3 Econometric Analysis Results

Relationship (regression) of other variables and Access to value chain finance was analyzed using binary logit regression method.

Table 8: Model Summary

Step	Chi-square	df	Sig.
1	8.731	8	.366

The most common assessment of overall model fit in logistic regression is the likelihood ratio test, which is simply the chi-square difference between the null model (i.e., with the constant only) and the model containing the predictors. Under Model Summary we see that the -2 Log Likelihood statistics is 97.76. This statistic measures how poorly the model predicts the respondents' access to value chain finance, the smaller the statistic the better the model. The result of Cox and Snell R2 indicates that 53% of the variation in the dependent variable is explained by the predictor variable which is assumed to be good enough (table 8).

Table 9: Hosmer and Lemeshow Test

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	97.764[a]	.366	.533

As it is observed from the table above since P-value is 0.366 is greater than the level of significance at 5%. We can conclude that the data fits the model well. Since the p-value is 0.366 which is insignificant therefore our fitted logistic regression model is good fit (Table 9).

Variables in the Equation						**95% C.I. for EXP(B)**	
	B	S.E.	Wald	Sig.	Exp(B)	Lower	Upper
Gender_	-4.271	1.358	9.887	.002**	.014	.001	.200
Respondent _Ed	.832	.367	5.157	.023**	2.299	1.121	4.716
Year of experience_	-1.851	.367	25.495	.000**	.157	.077	.322
Production per hector	-.053	.068	.614	.433*	.948	.830	1.083
Average revenue	.000	.000	.749	.387*	1.000	1.000	1.000
Constant	2.663	2.137	1.554	.213	14.346		
a. Variable(s) entered on step 1: SEX_, Respondent _Ed, Year of experience_, Production per hectare,							

Table 10: Binary logit regression result for determinants of access to value chain finance

The above table 11 shows estimated coefficient, their P-values and odd ratios with 95% Confidence intervals obtained from binary logistics model describing the respondents' access to in kind loan as a Malt Barley value chain financing tool in the past 12 months. From the table 11, it is observed that the estimated odds ratio 0.014 indicates that the odd ratio of Female respondents are 0.014 times less likely to access value chain finance than Male respondents. This finding is in line with the finding of Efa. (2017), that reveled ‘'…being a male-headed household, which increases the demand for credit by wheat farmers is not surprising because female-headed households are less likely to be land owner and therefore would prefer joining credit programs that lend for nonfarm businesses, which gives seasonal agricultural loans only.

Gender of the borrower is an important factor for determining farmers demand for credit. Many studies find that women participate in informal finance more than men, especially in the savings side of the market''. In the same manner, the estimated odds ratio 0.157 indicates that respondents who has less malt barley production experience has 0.157 times less likely hood to gate access to value chain finance than their counter party controlling for other variable in the model. In same manner respondents with lower average production per hectare has .433 timeless likelihood of accessing to value chain finance

Never the less, estimated odds ratios 2.299 indicate that those respondents with higher education have 2.299 times more likely to access value chain finance. This indicate the increase in education level will enhance the likelihood of accessing the value chain finance while the lowest in Education level will result in less or no access to Value chain finance. This finding is also supported by the finding of Ma-Azu, (2015), that reveled "The years of formal education attained have a significantly positive effect on the amount of credit accessed by the farmers from the formal sources". Regarding to the financial service use, estimated odds ratio 1.701 indicates that those respondents who has any financial service use has 1.701 time more likely to access the value chain finance in the study area.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter will have three parts which include brief summary of the key findings, have brief conclusion of the study and value chain specific recommendations in order to inform concerned and relevant actors to step up in to the value chain and contribute to make the malt barley value chain effective and efficiently function.

5.1. Summary of Key Findings

Our finding shows that 73.4% of the respondents have access to loan in kind in the form of agricultural inputs including fertilizer, improved seeds and chemicals. Never the less ,the loan amount farmers are accessing was far less than the cost of malt barley production amount farmers needed per hectare of land which was less than 40% of production cost for those respondents access to finance and 36% of respondents who didn't take a loan responded. The religious probation (riba) was a major reason not to take a loan and followed by 26%, 20% Lack of guaranty/physical collateral and respondents do not know where to take a loan from respectively as a reason not to take the loan. But about 18% of the respondents said that, Interest rate was too high to take a loan which is also considerable percent of the total respondents.

Moreover, from the logistic regression analysis was also concluded that the odds of securing Gender of the respondents, Year of Malt barley production experience, Types of financial serves use and Education Level of the respondents are significant variables seems to determine value chain finance access of malt barley producing smallholder farmers in Lemu bilbilo district.

Many actors play in malt barley value chain. Grain traders are becoming the most leading buyers of malt barely from producers, followed by Farmers` primary cooperatives, Local Market and Asela Malt factory was buying poorly directly from producers but from Primary cooperatives and Grain traders through Multi purposive primary cooperatives the same as other malting and brewery companies are doing through agent produce aggregation.

There are different challenges at different functions of the value chain that hinders the well-functioning of the chain in the study area. Among other challenges at Input supply function are : Lack of good quality seed, Lack of improved malt barley seed, Shortage of chemicals for emerging disease, Involvement of illegal and unlicensed chemical suppliers ,high cost of fertilizers and high interest. In the same fashion at Production function: Poor linkage with value chain actors, Low price of product, high price of inputs, Lack of capital to purchase inputs ,Higher market distance , Lack of storage, and diseases and pest attacks, Limited services of extension and credit are the major challenges.

According to the finding of this study, major actors involved in Malt Barley value chain in the study area are Galema Union, Ethiopia Seed Enterprise, Oromia Seed Enterprises, Heineken, Soufflét malting plc, Buusaa Gonofaa MFI S.Co, Asella Malting factory, Farmer service centre, in supply function, Small holder farmers, Commercial farmers, Seed producer cooperatives in production function, Primary cooperatives, Private traders, in Trading function, Asella malting factory, Souffilett malting PL.C, Boort malting PL.C in malting function and St` George ,Meta Deago, Habesha, Heineken in Brewing function. The main value adding activities undertaken at each stage of the chain were transporting, sorting and packaging, filtering and processing.

In study area the Malt barley value chain Finance source primarily for smallholder farmers are Micro Finance in the form of In kind Input finance(Improved seed, chemicals and Fertilizer), Informal money lenders (grain traders, families and friends). Cooperatives Bank of Oromia also finances Malt barley processors, Unions through which that finance trigger down through Primary cooperatives to their members. Malt barley processors like Malting factors including Asella Malting factory, Brewery factories, Soufflét Malting Company are also a financing source for malt barley value chain finance. However, commercial banks are reluctant to offer credit to smallholder farmers as the collateral requirements, loan size were not affordable to small holder farmers.

5.2. Conclusion

This thesis research analyzed malt barley value chain finance at producer's level. Primary and secondary data were collected and analyzed to make conclusion of malt barley value chain finance. The primary data were collected from 139 households using a structured questionnaire. Secondary data were collected from the review of related literature. Moreover, the research initiated to gain a wider understanding of the malt barley value chain actors, the role actors are playing in core value chain functions, Supporting and Enabling functions, malt barley value chain finance providers, and challenges and opportunities of the value chain in the study are by employing mixed research method. The following questions were administered:

- What are actors playing input supplying, producing, processing, trading and retailing role in the Malt barley value chain in Lemu Bilbilo district, Arsi zone?
- What are challenges and opportunities in value chain finance in Lemu Bilbilo district, Arsi zone?
- What are major determinants of access to value chain finance in the value chain for producers?

The search problems were analyzed focusing on access to finance for farmers, grain aggregators unsolved issues. There are few value chain financers from the chain actors and from outside of the chain actors but it is not widely known and common doing value chain finance in Ethiopia which could probably contributed for low financial inclusion in the country. Moreover, because of the multidimensional and complex nature and poorly developed value chain systems in Ethiopia, Financial institutions are facing challenge in identifying factors that influence rural finance in general and value chain finance specifically. Malt barley value chain as an example, is one of the value chain that value chain finance not upgraded. Microfinance are the majorly financing smallholder farmers in the study area and the finance tool they are using are input financing types of value chain financing products. Value chain has financed by creators as well as outside of the core actors. It less seen in the value chain financing by processors to smallholder farmers and by input suppliers rather financial institutions are playing additional role of input sourcing and supplying in the vale chain in addition to financing role.

Based on the results it can be stated that factors hindering the value chain finance are lacks of physical collateral, limited knowledge of financial sources. Female has lower chance of accessing the value chain finance for malt baley while production years of experience and education level have also positive effect on accessing value chain finance for smallholder farmers. Access to finance remains a major challenge for smallholder farmers in most developing countries like Ethiopia. Because smallholder farmers cannot afford yield-enhancing inputs, farm productivity often remains low on smallholder farms despite available technology for achieving higher yields. Hence, advancing value chain finance while solving the major hindrance to smallholder farmers to access finance will help to boost production and productively. This will also benefit to increase efficiency of the value chain and integration of the chain as well.

5.3. Recommendation

Based on the study findings, the following are recommended to improve the Malt barley value chain finance in the study area:

- Microfinancing institutions operating in the study area shall adopt value chain financing and advance value chain based finance approach than bare cash finance to the farmers to meet farmers cost of production.
- Microfinance and Association of Microfinance shall work on enhancing financial literacy of farmers as considerable percentage of farmers do not know where to take a loan and women empowerment shall be prioritized.
- Value chain actors such as NIGOs, Government body, Unions shall facilitate linking the value chain financer with input suppliers and marketing, expanding financial service use to the rural community including crop insurance, Farmers saving and easing credit policy for smallholder farmers including the collateral requirements can help increase access to value chain finance of the smallholder farmers.

- Enhancing forward linkage of producers; strengthening functions of farmers' cooperatives; increasing credibility and market linkages of malt barley value chain actors, and improving information dissemination at input supply, production and marketing stages could help improve the value chain development and functioning of malt barley in the study area.

5.4. Direction for Future Research

The initial aim of this research was to make Malt barley value chain analyses and determine the factors affecting access to Malt barley value chain finance at producer/farmer level in the study area, Lemu bilbilo Woreda. The value chain mapping analytical framework and value chain finance analysis framework also employed. The work was limited to factors affecting access to value chain finance at producer level specifically smallholder farmers. It does not assess the value chain finance need of aggregators, processors, traders at larger scale. The theoretical framework was tried to include all function in the value chain and zoom in the actors linked to the producers in the core actors of the value chain.

This study partakes some limitations. The study result emanates from Lemu Bilbilo district of Oromia region and had a limitation to make generalization covering Ethiopia in general. Even though the model used in this study was found to be best in reducing self-selection bias, it was difficult to capture unobservable characteristics of the respondents which again may have implications on the result of the study. To get better insight into the factors affecting malt barley value chain, forthcoming studies should include more samples and carry out further studies incorporating other parts of Ethiopia

Reference

Aderaw Gashayie and Dr Manjit Singh (2016). Development of Financial Sector in Ethiopia: Literature Review, Punjabi University, Patiala, India.

Bauchet, J., Marshall, C., Starita, L., Thomas, J., & Yalouris, A. (2011). Latest Findings from Randomized Evaluations of Microfinance. In Access to Finance FoRuM Reports by CGAP and Its Partners,

Beklentİlerİ, Z. V. E., & Alemu, S. (2018). The Performance of Ethiopian Microfinance Institutions, Challenges and Prospects. Karadeniz Teknik Üniversitesi Sosyal Bilimler Enstitüsü Sosyal Bilimler Dergisi

Central Statistical Agency (2013). Crop Production Forecast Sample Survey for the year 2013/2014. Report on Area and Crop Production forecast for Major Crops (For Private Peasant Holding, Meher Season) Addis Ababa, Ethiopia, 7-10. 2013.

Central statistical agency (2017). Agricultural sample survey 2016/2017 (2009 E.C) Volume I report on area and production of major crops (private peasant holdings, Meher season), Addis Ababa.

Cobus Oberholster,Chris Adendorff and Kobus Jonker. (2015). Financing agricultural production from a value chain perspective, South Africa.

Efa Gobena Tura, Tadesse Kenea, Tura Kaso, (2017). Determinants of Demand for Credit among Wheat and Teff Smallholder Farmers in Central of Ethiopia (Arsi and South West Shewa). American Research Journal of Business and Management; V3, I1; pp:

Fekadeselassie Wubie (2017). Assessment of integrated milk value chain and credit service participation of milk producers in Ethiopia: the case of sululta area dairy value chain, Ethiopia

Food and Agriculture Organization (2014). Food Balance Sheets FAOSTAT Rome http://faostat3.fao.org/download/FB/FBS/E.

Food and Agriculture Organization (2012). The state of food and agriculture: Investing in agriculture for a better future. FAO, Rome.

Fries, B, and B. Akin. (2007). Value chains and their significance for addressing the rural finance challenge. Accelerated Microenterprise Advancement Project United States Agency for International Development

Gebremedhin et al., (2009). Gebremedhin, B.; Hirpa, A.; Berhe, K., 2009 Feed marketing in Ethiopia: Results of rapid market appraisal. Improving Productivity and Market Success (IPMS) of Ethiopian farmers project Working Paper 15. ILRI (International Livestock Research Institute), Nairobi, Kenya.

Getahun, H. (2001). Financing Small Famer Development in Ethiopia. International Conference on African Development.

Gurmessa, N. E., & Ndinda, C. (2017). Smallholder s' Access to and Demand for Credit and Influencing Factors: Policy and Research Implications for Ethiopia.

Jessop, Reuben, Boubacar Diallo, Marjan Duursma, Abdallah Mallek, Job Harms, and Bert van Manen. 2012. "Creating Access to Agricultural Finance: Based on a Horizontal Study of Cambodia, Mali, Senegal, Tanzania, Thailand, and Tunisia."

Jon Hillin and Madelon Meijer (2006). Guidelines for Value Chain Analysis Food and Agriculture Organization of the United Nations (FAO), Rome, Italy

Joshua Kenneth Baloyi (2010). An analysis of constraints facing smallholder farmers in the Agribusiness value chain, University of Pretoria Pretoria.

KIT and IIRR. (2010) .Value chain finance: Beyond microfinance tor rural entrepreneurs. Royal Tropical Institute, Amsterdam; and International Institute of Rural Reconstruction, Nairobi

Ma-Azu Abdul-Jalil (2015) .Determinants of access to credit and its impact on household food security in karaga district of the northern region of Ghana, Ghana

Miller, C. & Jones, L. (2010) .Agricultural value chain finance: Tools and lessons. FAO, Rome.

Molla, et al, (2018). Molla MK, Yihenew A, Zina D. Evaluation of malt barley (Hordeum Distichon L.) genotypes for grain yield and malting quality parameters at koga irrigation in Western Amhara Region.

Mpuga, P. (2010). Constraints in access to and demand for rural credit: Evidence from Uganda. African Development Review

Mukasa, A. N., Simpasa, A. M., & Salami, A. O. (2017). Credit constraints and farm productivity: Micro-level evidence from smallholder farmers in Ethiopia. In Working Paper Series No. 247. African Development Bank Abidjan

Schneider K. and M.K. Gugerty (2010). Agricultural Productivity and Poverty Reduction: Linkages and Pathways. The Evans School Review, Vol. 1

Samuel Weldeyohanis, FikaduMitiku and RijaluNegash (2017). Value Chain Analysis of Malt Barley (Hordeumvulgarel.): A Way Out for Agricultural Commercialization? The Case of Lemu Bilbilo District, Oromia Region of Ethiopia.

Swamy, Vighneswara and Munusamy Dharani. (2016). analyzing the agricultural value chain financing: approaches and tools in India. Agricultural Finance Review

Tarekegn Garomsa (2016). The Role of Smallholder Farmers in the Import Substitution and Industrialization of Ethiopia: The Case of Malt Barley Producers in Arsi and Bale Areas, Ethiopia, Indira Gandhi National Open University School of Continuing Education Department of Rural Development.

Tegegn, A., (2013). Value chain analysis of vegetables: The Case of Habro and Kombolcha Woreda in Oromia Region (Doctoral dissertation, M.Sc thesis submitted to School of Graduate Studies of Haramaya University).

Umberger, W, (2014). Mapping the Value Chain Paper presented at the AICR Capacity Building for Research Workshop, University of Adelaide.

USIAD (2021). Applying system mapping and measurement to agricultural finance understanding smallholder access to finance, Uganada

Introduction

Annex 1:

Yooyaa! My name is **JemalAbdo**, MA **student of Regional Local Development Study at College of development Study Addis Ababa University Ethiopia**. I am doing MA dissertation with a title of **Value chain Finance Analysis a way out to commercialization: A case of Malt barley value chain in Arsi Zones Oromia Region**to analyze malt barley value chain and study the determinants of malt barley value chain finance in the study areas. I request your time to respond the questioner. I assure you that all information you have provided is treated confidentially. The survey will take 30 min times and I very much appreciate your kind cooperation.

Section A. General Information

Zones:

Questionnaire number: ____________________________________

Name of Enumerator: ______________________________________

Telephone: ____

Date ______ _____/_____ ____/2020

___________________ District/PA _____________________ Kebele_____________________

Name of respondent____\

Section A. Respondent Profile

1. Name of the HH:____________________________
2. Sex of the HH head

1	Male
2	Female

3. Age of the HH head

1	<25
2	25-34
3	35-44
4	45-55
5	>55

4. What is your highest Education level of the HH Head?

1	Not able to read and write
2	informal
3	primary
4	Secondary
5	High school
6	University

5. Family size in age group

	Total Family Size	Family size Age <14	Family size Age 15-64	Family Size Age >64
Total				

family member				

Section B. House Hold`s Land holding and Economic Activities

6. How many Years of experience in malt barley production (year/s)

☐ ___________Year

7. Land size you farm malt barley (in hectares)

☐ _______________hectare

8. How much did you spent on malt barley production cost in last year per hectare of land (Indicate value for each item)

☐ ___________ ETB

9. How much malt grain do you produce from one hectare (quintal)

quint ________________

10. What is your average income (estimated income) of your household this year (in birr) from malt barley sells per hectare?

______________ ETB

11. Where you sell your product?

1	Local market
2	Grain traders
3	Multi purposive cooperatives (PCs)
4	AMF
4	Other Malting factories- Specify

Section C. Current access to Value chain financial service

12. Do you use any financial service?

1	Yes
2	No

13. Which types of financial services do you use(check all that apply)

1	Saving
2	Credit
3	Insurance
4	Saving and Credit
5	All

14. Do you have a loan outstanding? If No, proceed to

1	Yes
2	No

15. Loan amount(in Birr)

[ ] _____________ ETB

16. Loan term?

17. For what purpose do you use the credit

[ ] -------- month

1	Input purchase of Fertilizer, Chemical, improved seed
2	For harvesting
3	For land renting
4	For purchasing grain
5	Other(specify)

18. Name of the institutions where you use financial services (check all that apply)

1	Bank
2	Microfinance Institutions
3	Rural Saving and Credit cooperatives
4	Multi-purposive Cooperatives
4	Traders
5	Informal sources

19. Why are you not interested in taking credit?

1	High interest rate
2	Religious prohibition of riba
3	Bureaucracy, too many formalities
4	Corruption
5	Distance from the market place in hr.
6	No bundle financial services
7	Lack of guaranty/physical collateral
5	Distance from market place in hr.

Section D. Factors affecting Value chain finance

20. Please rank the 3 **most important constraints** in obtaining a loan from Formal financial Institutions?

	1	Bureaucracy, too many formalities
	2	Corruption
	3	Distance from Financial institution (service center) hr.
	4	High interest rate
	5	No bundled financial services
	5	Religious prohibition of Riba
	6	Distance from the market place in hr.
	7	Lack of guaranty/ physical collateral

21. Please rank the 3 **most important constraints** in obtaining a loan from Informal financial sources?

	1	Bureaucracy, too many formalities
	2	Corruption
	3	Distance from Financial institution (service center) hr.
	4	High interest rate
	4	No in-kind loan (bundled financial services)
	5	Religious prohibition of Riba
	6	Distance from the market place in hr.
	7	Lack of guaranty/ physical collateral

22. Which part of the value chain actor more challenged by lack of access to finance?

1	Corruption
2	Distance from Financial institution (service center) hr.
3	High interest rate
4	No in-kind loan (bundled financial services)
5	Religious prohibition of Riba
6	Distance from the market place in hr.
7	Lack of guaranty/ physical collateral

23. Which parts of the Value Chain are most constrained by the lack of appropriate credit?

1	Input supply
2	Production function
3	Aggregating function
4	Processing

Questioners for Mapping the Malt Barley Value chain actors

Semi- structured Questionnaire (KII)

1. Semi-structured questionnaire for Input Distributers)
   i. District:_____________________ Kebele _____________________
      - What are the input types you have distributed? Fertilizer (types), seed (type) chemical which type?
      - What Average volumes are you selling each year?
      - At what price do you sell the seed per quintal?
      - Where do you procure your seed from (region/ institutions who from)?
      - How do you channeling the seed? Do you work with primary cooperatives, union, model farmers, Farm Service center etc.?
      - Are you working through voucher system? If yes, with which institutions? Describe how it works.
2. Semi-structured questionnaire for organization/Institution/s working seed distribution using Voucher system(KII)
      - Can you explain how Voucher system work in malt barley seed distribution?
      - What sort of seed do farmers ask for?
      - With which financial institution/s you have worked with the voucher system?
3. Semi-structured questionnaire for Microfinance/Financial institutions?
   i. Financial Institution:_________________
   ii. Branch _____________________
   iii. Designation of interviewee:______________________________
      - Do you have agricultural credit/Loan product?
      - How do you extend finance to Malt barley value chain? Which part of the chain do you finance
      - How do you channel credit to farmers? In kind in cash? Explain the operational channels; - Group / individual methodology, repayment terms, interest and other fees, terms and condition with grain resell to MFI etc.

- Is there blended serve like extension service, chemical application, business advice you provide to farmers beside the credit? Explain if any;
- What do you think is/are the most bottlenecks in Malt barley value chain finance?
- What do you think would be the potential solutions to easy those bottlenecks?

4. Semi-structured questionnaire for Famers(FGD)
   i. District:____________________
   ii. Kebele ____________________/Specific place
   iii. Total FGD participants:-__________Female_______
      - Types of malt barley seed that farmers are demanding?
      - Why farmers prefers (choose) particular seed?
      - How do you finance inputs for your farm?
      - Where do you access credit? How it works?
      - Have you ever used voucher system to access the inputs?
      - What is the cost of malt barley production on one hectare of land?
      - Where do you sell the mal barley grain?
      - Where do farmers sell their produce primarily? The potential buyers
      - What is the price at producer level?
      - Who are the participants in aggregation/collection?
      - What is the price at aggregation stage?
      - What are the costs at aggregation level?
      - Who participates in whole selling the malt?
      - What is the price at wholes selling stage?
      - What is the price at wholes selling stage?
      - What are the costs?
      - Who do processing the malt?
      - What is the price at processor stage?

5. KII checklist for District/Worde office of agriculture/cooperatives promotion office on Regulatory frameworks,

   Woreda________________________

   Kebele ________________________

   Date ________________________

   Name of interviewee ___________________________

   Name of the organization: _______________________

   i. What are the main laws and rules (including taxes) that apply at different stages in the Value Chain?
   ii. Who are responsible to enforce the laws?
   iii. What are the most bothersome aspects of regulation?
   iv. Is there a political economy that significantly influences the Value Chain?

Annex: II Pictures from the field research

Focus group discusion

Valeu chain financing Inistitution(MFI)