

**COFFEE VALUE CHAIN ANALYSIS IN BEDELE DISTRICT, BUNO
BEDELE ZONE OF OROMIA REGIONAL STATE, ETHIOPIA**

MSc. THESIS

**BY
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**COFFEE VALUE CHAIN ANALYSIS IN BEDELE DISTRICT, BUNO
BEDELE ZONE OF OROMIA REGIONAL STATE, ETHIOPIA**

JIMMA UNIVERSITY

MSc. Thesis

By

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Agribusiness and Value Chain Management*

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DEDICATION

This Thesis is dedicated to my beloved wife, Konjit Alemu and my brother Bogale Etefa for their unreserved support for success of this study.

STATEMENT OF THE AUTHOR

First, I hereby declare that this thesis is my own work and that all sources of materials used for this thesis have been exactly acknowledged. This thesis has been submitted in partial fulfillment of the requirements for MSc. degree at Jimma University and to be made available for end users and borrowers at the University's Library under rules and regulation of the Library. I solemnly declare that this thesis should not be submitted to any other institution anywhere for the award of any academic degree, diploma, or certificate.

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BIOGRAPHICAL SKETCH

The author was born in 1987 from his father AsefaNegu and Mother AbebuLuleessa in BunoBedele zone and brought up there. He attended elementary school at HaroKamise elementary school which is now junior High school. He completed 7th & 8th grade at RasTesemaNadew Junior High School. He attended Bedele secondary high school and completed grade 9-12 there. He took Ethiopian school leaving certificate examination and joined Alage ATVET and graduated with diploma in the field of Animal Science in regular program in 2006.

After his graduation, he was employed in Ilubabor Zone Metuworeda Agriculture office as DA (2007-2010) and joined Jimmauniversity in 2011 and graduated with BSC degree in the field of Animal Science in regular program in 2012. After his graduation, he serve cooperative promotion Agency in Metuworeda (2013-2015) Since November 2016 up to September 2017 he serve BunoBedeleZonalMarket development office. The author joined the School of Graduate Studies of Jimma University in October 2017 to pursue his MSc degree in Agribusiness and Value Chain Management in regular program.

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LIST OF ABBREVIATIONS AND ACRONYMS

| | |
|-------|--|
| BDOAM | Bedele District office of Market development |
| OoARD | Office of Agricultural and Rural Development |
| CLR | Classical Linear Regression |
| CLU | Coffee Liquoring Unit |
| DA | Development Agent |
| ECX | Ethiopian Commodity Exchange |
| FOB | Freight on Board |
| GDP | Growth Domestic Product |
| GMM | Gross Market Margin |
| NGO | Non-Government Organization |
| OLS | Ordinal Least Squares |
| PC | Primary Cooperatives |
| TGMM | Total Gross Market Margin |
| VIF | Variance Inflation Factor |

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ABSTRACT

This study aims at analyzing the value chain of coffee in Bedele district of BunoBedele Zone in Oromia Region with specific objectives of identifying coffee value chain actors and their respective functions, analyzing marketing margin of actor along coffee value chain and analyzing factors affecting marketed supply of coffee . Multistage sampling technique was used to select representative producers and data were collected from both primary and secondary sources. Primary data were collected from 150 producers, 17 traders, 2 primary cooperative and 1 cooperative union while secondary data were collected from district offices, published and unpublished documents. Descriptive statistics, value chain analysis and econometric model were used to analyze the data using STATA version 14 software. The major actors of coffee value chain in the study area were input suppliers, coffee producers, collectors, suppliers, cooperatives and union. These actors have role in coffee production, processing and marketing. Three main coffee marketing channels were identified in the study area. Margin analysis for value chain actors indicated that about 63 .4% of gross marketing margin in coffee value chain goes to coffee traders and producers earn about 36.6% of gross marketing margin. The result indicated that producers incur the highest cost for dry cherry coffee type about 50 % of the total cost incurred by actors in the chain and gained 40.9% net margins. Total gross marketing margin is highest in channel I which was 42% and lowest in channel III which was 32%. The result of multiple regression model revealed that coffee farming experience, education, land size and member to cooperative, affected marketed surplus of coffee positively and significantly whereas distance from the nearest market affected negatively and significantly. Recommendations drawn from the study findings include the need to improve the input supply system, strengthening farmerscooperatives, improving producers' knowledge, training farmers, improving productivity and volume sales of coffee, constructing infrastructure, strengthening the linkage among coffee value chain actors and strengthening supportive institutions.

Key Words: Coffee Value Chain, Margins, Marketed Supply, Multiple Regression & Bedele District.

1. INTRODUCTION

1.1. Background of the study

Coffee is one of favorite beverage, the most valuable traded commodities in the world, represents a critical source of income for smallholder farmers and their farm workers (Lewinet al., 2014). It is one of the most important commodities in the international agricultural trade, representing a significant source of income to several countries of Africa, Asia and Latin America (ICO, 2010).Coffee is vital to the economies of many developing nations, and this is especially true in East Africa and each year, approximately 450,000 tons of Arabica coffee, valued at more than \$1 billion, departs from the ports of Dares Salaam, Djibouti and Mombasa to buyers around the world (Jack, 2015).

In many African countries it is source of economy both in terms of export earning and generating income for small holder farmers; the coffee industry function in three key economic sectors which include the primary sector, the industry generates direct income, employments and output; in the secondary sector coffee is used as an input in the processing industry; the tertiary sector covers domestic whole sale and retailer marketing for domestic consumption and exports (International coffee council 114th, 2015).

Ethiopia is the birth place of Arabica coffee; its cultivation plays a vital role both in the cultural and socio economic life of the nation (Sisay, 2018). Ninety-five percent of the total coffee output is produced by over four million small-scale producers (Arslan and Reicher, 2011), and almost 20 percent of the Ethiopian population depends either directly or indirectly on coffee production, processing, marketing and transporting (USDA, 2014). According to ICO (2015), Ethiopia is a leading Arabica coffee producer in Africa, ranking the fifth largest Arabica coffee producer after Brazil, Vietnam, Columbia and Indonesia and tenth in coffee export worldwide, Coffee, over a long period, has been the most important commodity contributing with up to 50% of the country's export (CSA, 2011). Coffee is most important and backbone of Ethiopian economy, which accounts for an average 5% of GDP, 10% of the total agriculture production (Bizualem, 2018).

According to report of Ethiopian Coffee and Tea Development and Marketing Authority (2017/18), Ethiopia exported an average of 240,000 metric tons of coffee per annum to the

world market and During the 2017/18 marketing year alone Ethiopia registered a record almost 917 million U.S. dollars from coffee exports.

Ethiopia has a good potential to participate in high value coffee markets value chain because of its favorable geographic and climatic conditions since its successful participation in the cup of excellence auction event, buyers increasingly appreciate Ethiopian coffees as high quality coffees but the country is not benefited from this product because the value adding practice is almost negligible (Kumsa, 2015). Participation of smallholder farmers in coffee value chain is very important because it reduces marketing cost, increases economic benefit as that concentration on specialty coffee production with a portfolio of foreign contracts is economically preferable to a vertically integrated cooperative, which in turn produces more favorable coffee prices for smallholders than the nonaffiliated conventional farmers (Luna and Wilson, P.N., 2015).The coffee value chain is a vertically and horizontally integrated network of labor and production processes conceptualized as a series of nodes that are linked by various types of transactions and whose result is a finished commodity. According to (Chala and Bogale, 2010), coffee goes through several market players (chain) before it reaches to auction market.

The major portion of volume of products mobilized, value adding functions, market share and capital owned in coffee value chain of the country is under the hands of producers especially the large-scale private coffee plantations and state farms of coffee plantations (USAID, 2010).Coffee processing adds value and price in the chain, whereas its value chain actors are collectors, local traders, primary cooperatives, cooperative union, exporters, importers, domestic whole sellers and retailers, service providers and consumers (Alemayehu, 2014).

However, despite efforts, the performance of the coffee sector still remains lagging and Poorly instituted modes of production (Alemu.M.,2010). High marketing costs, low productivity, poor agronomic management, volatile price inadequate market infrastructure and an unorganized commodity marketing approach are indicators of market inefficiency that significantly limit coffee growers' share from the value of exports and total earnings from the sector (Rashid *et al.* 2015).

The sectors global value chains are quickly transforming because of shifts in demands and an increasing emphasis on product differentiation in importing countries (Ponte, 2012). Global annual coffee production fluctuates between 6 to 10 million tones, with production in the crop year 2017/18 totaling 9.5 million tones. Three countries, Brazil, Colombia and Vietnam, account for almost 58% of world coffee production. While Africa, whose share has been falling, produces between 15% and 18%.Ethiopia is now Africa's largest producer but still only accounts for about 3% of global output (Sanger, 2018).

According to CSA (2016), in Ethiopia, land used for Coffee production during 2016 production year were estimated 653,909.76 hectares and 4,145,964.55 quintals was produced with productivity of 6.34 quintals per hectare of land. In Oromia Regional State, 417,557.38 ha of land was allocated and 2,586,654.70 quintals was produced with average yield of 6.19 quintal/ha in 2015/16 Meher Season and coffee production in Oromia regional state is one of the potential areas of coffee production which accounts 62.4% of total coffee production in the country annually.

According to zonal office of Agricultural and Rural development annual report in 2018, among zones in Oromia, BunoBedele zone is one of the western parts of coffee growing zones of Ethiopia. The main cash crop in the study area is coffee and income source of smallholder farmers in the area highly relied on this cash crop. The average coffee production was approximately 185,820quintals which hold up to 7.2% what Oromia region produce in 2018 production year and Out of this the amount of coffee supplied to the market was 154,850 quintals of the total production. However, several problems hinder the performance of coffee production and productivity in this zone. Shortage of improved seed variety, low price of coffee products, price instability problems, costsof harvesting, reduced soil fertility, lack of input, poor infrastructure and disease are the major problem of coffee production and market.

Bedele district one of the nine coffee producer district found in BunoBedele zone. The district is ranking the fourth largest coffee producer afterChora,Didessa and Gechidistrict in a potential area of coffee production where a number of large coffee producer and above 63.5 percent of the small holder farmers producing coffee (BDOARD,2018). And also, land used for Coffee production during 2018 production year were estimated 4098.75hectares and 24678.44

quintals was produced with productivity of 6.02 quintals per hectare of land. which is less than national average 7 quintal/ha of coffee per annum and which hold up to 13.3 % what BunoBedele zone produces. So as to exploit the opportunity of the current growing demand for coffee development programs and approaches which bring actors to ultimate user of coffee is fundamental to improve quality and strengthen linkages. In light of the above information, this study focused to identify actors and their respective functions, identifying marketing margins of coffee Value chain actors along the chain and determinants of volume of coffee supplied to the market in study area.

1.2. Statement of the problem

Coffee value chain consists of a series of activities that add value to final product beginning with the production continuing with processing and marketing to the end users (ICO, 2013). This shows each activity step by step interlinked starting from producing to marketing. The challenges globally facing smallholder farmers that are lack of input to tackle low productivity, poor access to market, long supply chain, low value addition to green coffee, lack of infra-structure, in adequate access to financial services and in sufficient transfer of technology at country level(Mintenet *al.*, 2014)). Now days, Coffee producers are locked into production chain: their produce reaches consumers in different countries having passed through the hand of intermediaries (M. Karthkey, 2015).

Coffee producers in Ethiopia have historically received a very small share of the export price of green coffee (Worakoet *al.*, 2008). According to Tadesse (2006), factors for the lower price received by Ethiopian coffee farmers at producer level are the practice of strip picking and drying on bare soil moreover, Illegal trading is flourishing at primary market by the presence of unlicensed illegal traders who are famous at mixing red and dry cherry with foreign material, moisture dry cherries for the purpose of weight increasing and storing coffee at place with high moisture content, adulteration of different coffee type at auction market;.

Coffee value chain and its marketing system is one of the most important issues to be considered while thinking over sectors development. On the base of this fact, different studies have been conducted about agricultural marketing system of Ethiopia in general and of coffee in particular. According to Alemu and Meijernik, (2010), linking small scale producers to

markets are widely recognized as a valuable for value chain development. But in Ethiopia agricultural markets are fragmented and not well integrated into a wider market system, which leads to weak value chain integration as well increases transaction costs and reduces farmers' incentives to produce for the market (Aklilu and Ludi, 2010). According to Mintenet *al.*, (2014) there is low value addition in the coffee sector in Ethiopia and this did not improve significantly over the past several years and only 30% of coffee exported over the decade was washed and the rest is only sundried.

Moreover, a lot of studies were undertaken regarding coffee value chain in different parts of Ethiopia so far by different authors and were not under taken in Bedele district. For instance, Mohammed (2013) conducted study on value chain analysis of coffee in Nensebo District, West Arsi Zone of Ethiopia. Alemayehuet *al.* (2015) conducted a study on the existing forest coffee market channel of EssaraWoreda of Dawuro Zone Ethiopia. Dessalegn (2014) conducted a study on analysis of coffee marketing cost and margins in South West, Ethiopia. Engida(2017) conducted study on analysis of coffee market chain in Gewata District of kaffa zone, Southwest Ethiopia etc.

Coffee producers in Bedele district are widely characterized by limited marketing linkage which emanated from limited infrastructure, limited improvement in productivity, low returns for farmers, inconsistency in quality, poor agricultural practices, long supply chain and related transactional costs, frequent marketing information and lack processing machines support and a lack of access to capital at the bottom end of the value chain. This results them inability to force local collectors and traders' price setting and exploitation at farm get level. Although good geographic and climatic condition for coffee production of the district, the market supply of coffee is low as compared to its potentiality. This is due to some socioeconomic, production, market and institution related factors. In spite of the fact that markets are crucial in the process of agricultural commercialization, transaction costs and other causes of market imperfections could limit the participation of farm households in different markets (Moti, 2007). This implies that markets could be physically available but not accessible to some of the farm households. Therefore, there is a need to employ a value chain approach to fully understand and make an intervention to resolve the problem of coffee marketing at all stages in Bedele district.

Despite the significance of coffee in the livelihood of many farmers and is being both staple and cash crop in the study area, this study is designed to address the prevailing information gap on proper understanding of demographic, socioeconomic and institutional factor affecting coffee market supply and marketing margin as well as identifying actors involved in the chain and their respective role including upgrading and governances of coffee production and marketing. Therefore, analysis of value chain is an essential prerequisite to find out the expected reasons that limit the overall performance of value chain and marketing of coffee and come up with specific workable solutions. Hence, this study was proposed to analyze coffee value chain of small holder farmers of the Bedele district and initiated to fill the gap partially by answering the following research questions.

1. 3. Research Questions

- Who are the actors and what are their respective functions along coffee value chain in the study area?
- How are coffee marketing margins shared among the value chain actors?
- What factors are influencing volume sold of coffee in the study area?

1.4 Objectives of the study

1.4.1. General objectives

The general objective of the study is to analyze the Coffee value chain in Bedele District with the following specific objectives.

1.4.2. Specific Objectives

1. To identify coffee value chain actors and their respective functions in the study area;
2. To analyze marketing margins of actors along coffee value chain;
3. To analyze factors that influence quantity of coffee supplied in the study area.

1.5. Significance of the study

The study have generated valuable information on the coffee value chain in the study area and that might assist policy makers at various levels to make relevant decisions to intervene in the

development of coffee production, marketing, processing and designing of appropriate policies and strategies. Governmental and nongovernmental organizations that are intervening through their programs in the development of the coffee sub-sector are expected to benefit from the result of this study. The findings of the study might also be useful to input suppliers, producers, traders, and marketing agents to make their respective decisions. It may also serve as a reference material for further research on similar topics and other related subjects.

1.6. Scope of the Study

Value chain analysis includes from producers to the end users covering wide range of geographical areas starting from local to global markets. This study had scope of coffee value chain and to cover the identifying actors and their respective function, mapping the value chain, Margins and volume of supply of coffee on smallholder coffee producers in which representative sample size has been selected using multistage sampling techniques in a cross-sectional survey study. However, in this study the value chain analysis focuses only on Bedele district as a case of reference.

1.7. Limitations of the Study

The study was limited spatially as well as temporally to make the study more representative in terms of wider range of area, limited budget and time horizon. Furthermore, since Ethiopia had wide range of diverse agro-ecologies, institutional capacities, organizations and environmental conditions, the result of the study may have limitations to make generalizations and make them applicable to the country as a whole. However, the findings are expected to be useful for areas with similar context with the study areas.

1.8. Organization of the Thesis

This thesis has been organized under five chapters. Chapter one presents introduction (background, statement of the problem, and research questions, objectives, significance of the study, scope and limitation of the study). Chapter two presents review of literature on theoretical and empirical evidences that support the study and conceptual framework. Chapter three presents research methodology (description of the study area, data types, sources and methods of data collection, sampling procedure and sample size determination, methods of

data analysis, model specifications, and hypothesis and variable definitions). The findings of the study are discussed and presented in chapter four. Finally, chapter five deals with summary, conclusions and recommendations of the study.

2. LITERATURE REVIEW

2.1. Theoretical Literature Review

Value chain actors are those involved in producing, processing, trading or consuming a particular agricultural product. They include direct chain actors which are commercially in the chain producers, traders, retailers, consumers and indirect actors which provide financial or non-financial support service, such as bank and credit agencies, business service providers, government, researchers and extensions (KIT *et al.*, 2006).

Supply chain is an integrated process where in a number of various business entities (i.e. suppliers, manufactures, distributors, and retailers) work together in an effort to: (1) acquire raw materials, (2) convert these materials into specified final products, and (3) deliver these final products to retailers. The chain is traditionally characterized by a forward flow of materials and backward flow of information (Beamon, 1998).

Value Chain it allows businesses to respond to the marketplace by linking production, processing and marketing activities to market demands. According to Parker (2004), a value chain approach differs from the supply chain approach in that the basic characteristic of a value chain is market-focused collaboration: different business enterprises work together to produce and market products and services in an effective and efficient manner.

The value chain concept was developed and popularized in 1985 by Michael Porter in “Competitive Advantage,” a seminal work on the implementation of competitive strategy to achieve superior business performance (Feller *et al.*, 2006). (Holsapple *et al.*, 2001) suggested that a set of interrelated generic activities (Primary and Support activities) within the organization add value to the service and product that the organization produces. According to Baker (2007), the value chain concept explained as it traces product flows; shows value additions at different stages; identifies key actors and their relationships in the chain; identifies enterprises that contribute to production, services and required institutional support; identifies bottlenecks preventing progress; provides a framework for sector-specific action; identifies strategies to help local enterprises to compete and to improve earning opportunities; identifies relevant stakeholders for program planning (also in distant markets); for good

policies and programs, we need to understand how local enterprises fit into the global economy.

2.1.1. Definitions of value chain

In literature, various definitions of value chains are found. Toma and Bouma, (1998) defined

Value chain as:

“A strategic collaboration of organizations for the purpose of meeting specific market objectives over the long term and for the mutual benefit of all “links” of the chain. Value chain in its simplest form is a collaborative effort. That means it is an alliance of enterprises collaborating vertically to achieve a more rewarding position in the market. Collaborative means here voluntary involvement and an expectation of complementary behavior resulting in the achievement of a common result or goal”.

KIT *et al.*, (2006) defined value chain as:

“Specific type of supply chain one where the actors actively seek to support each other so they can increase their efficiency and competitiveness. They invest time, effort and money, and build relationships with other actors to reach a common goal of satisfying consumer needs so they can increase their profits”

Dempsey *et al.* (2006) explain Value-chain Approach as:

“A value chain is a supply chain consisting of the input suppliers, producers, processors and buyers that bring a product from its conception to its end use. A value-chain approach to development seeks to address the major constraints at each level of the supply chain rather than concentrating on just one group (e.g. producers) or on one geographical location. Constraints often include a lack of information about or weak connections to end markets, and or inadequate coordination between actors. Taking a value chain approach is often essential to successful economic development since micro and small enterprises and smallholder farmers will only benefit over the long term if the industry as a whole is competitive”.

Hoobset *al.* (2000) defined value chain as:

“A vertical alliance or strategic network between a numbers of independent business organizations within a supply chain. The supply chain refers to the entire vertical chain of

activities: from production of farm, through processing, distribution, and retailing to the consumer i.e. from gate to plate.

ILO (2006) defined value chain as:

“A sequence of target oriented combinations of production factors that create a marketable product or service from its conception to the final consumption. This includes activities as design, production marketing distribution and support services up to the final consumer. The activities that comprise a value chain can be contained within a single firm or divided among different firms, as well as a single geographical location or spread over wider areas”.

Kaplinsky and Morris (2001) definition is widely used:

“The value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use”.

Generally value chain is the system of linked steps necessary to transform raw materials into a finished product for an end consumer, where each step along the way adds to a product's value. It's much like a supply chain, except it focuses on how value is added rather than how raw materials get from one point to the other. In some ways the value added is obvious; in other ways, more slight. In the case of coffee, for example, the value chain begins with the preparation of land (clearing it, financing it) and then progresses along to planting, trimming, harvesting, drying, packaging, inspecting, shipping, domestic marketing and selling. At every point along the chain, value is added for the consumer.

2.2. Dimensions of Value Chain

Value chain analysis can be an important tool with which to examine structural change. All together, a value chain comprises five dimensions; these are the technical structure, the actors in a chain, the territorial, the input output and the governance structure (Gereffi, 1994 as cited in Gereffi and Korzeniewicz). The analysis of these structures will give answers to a set of questions: How does the production process run; who participates at which stage; where do the different stages take place; how are they linked, who has which benefits, etc. They are

needed to find the relevant points of intervention for a successful integration of poor population sections. In the following, the different dimensions of a value chain are explained.

2.2.1 Technical structure and actors

The technical production process can generally be separated into five stages: input supply, primary production, processing, marketing and consumption. On every stage, one to several different actors can be found. Trading activities do not only take place between the stages of processing and consumption but also between production and processing or input supply and production. Nevertheless it is not mentioned as an own stage of the chain there. It is assumed that between these stages trading activities are mostly undertaken by the participants of the respective stages as a pure transfer of goods within the production process without specific marketing activities (Schipmann, 2006).

2.2.2 Territorial structure

The territorial structure is “understood as the geographic concentration or dispersion of production and marketing” (Stamm, 2004) and with that gives an overview of the location of the single stages of a value chain.

2.2.3 Input-output structure

The input-output relationship concerns the link of inputs, activities and actors involved in the production, trade and finalization of the commodity for the consumer market and the geographical coverage (Tuvhag, 2008). The input output structure gives mainly an overview about four aspects: the amount and quality of a good that is needed from one stage of the chain to fulfill the requirements of the following stage, the value that is created on each stage, the profit distribution in a chain and the information flow between the single stages of a chain (Schipmann, 2006).

2.2.4 Governance structure

Governance is a central concept to value chain analysis can be defined as non- market coordination of economic activity. Governance ensures that interaction between firms along a value chain exhibit some reflection of organization rather than being simply random (Stoker,

2006). Another important feature of governance is it involves the ability of one firm in the chain to influence or determine the activities of other firms in the chain. This power is exercised through the lead firms control over key resources needed in the chain, decisions about entry to and exit from the chain and monitoring of suppliers. Humphrey and Shmitz (2001) argue that the issue of governance in value chains is important for market access, fast track to acquisition of production possibilities, distribution of gains, leverage points for policy initiatives, and channel for technical assistance.

2.3. Why Value Chain is important

Value chain analysis is one of the principal ways of channel mapping and a high-level model of how businesses receive raw materials as input, add value to the raw materials through various processes, and sell finished products to customers. In value chain analysis operation activities, value adding and costs are integrated phenomenon. It involves all the process from the market point back to the beginning of activities usually between input supplies and product marketing. The process of tracing a product flow through an entire channel from the point of product concept to the point of consumption highlights the pattern of inputs, constraints, value adding or non value adding activities, associated costs and competitive advantages (Yohannes, 2005).

According to Kaplinsky and Morris (2001), there are three main sets of reasons why value chain analysis is important in this era of rapid globalization. The first reason they raised is that with the growing division of labor and the global dispersion of the production of components, systemic competitiveness has become increasingly important. Second, efficiency in production is only a necessary condition for successfully penetrating global markets. Third, entry into global markets which allows for sustained income growth requires an understanding of dynamic factors within the whole value chain.

The value chain can be a very useful conceptual tool when we try to understand the factors that impact the long-term profitability of businesses and when developing a successful strategic plan for your business (Brent, 2005). The value chain can help you answer questions regarding how the produce you produce reach the final consumer; the structure (economic relationships) between players in the chain; how this structure is likely to change over time;

the key threats to the entire value chain; and the key determinants of your share of the profits created by your chain. It helps the policy maker to find out where the bottlenecks are. Which part of the chain holds up in the others? Which bottlenecks deserve priority attention of government ? Where can the donor agencies help? (Hubert, 2005).

2.4. Marketing Costs and Margins

Marketing Performance: Market performance can be evaluated by analyzing costs and margins of marketing agents in different channels. A commonly used measure of system performance is the marketing margin or price spread. Margin or spread can be useful descriptive statistics if it used to show how the consumer's price is divided among participants at different levels of marketing system (Mendoza, 1995).

Marketing costs: Marketing costs refers to those costs, which are incurred to perform various marketing activities in the shipment of goods from producers to consumers. Marketing cost includes: Handling cost (packing and unpacking, loading and unloading putting inshore and taken out again), transport cost, product loss, storage costs, processing cost, capital cost (interest on loan), market fees, commission and unofficial payments (Heltberg and Tarp, 2001).

Marketing margin: A marketing margin is the percentage of the final weighted average selling price taken by each stage of the marketing chain. The total marketing margin is the difference between what the consumer pays and what the producer/farmer receives for his product. In other words it is the difference between retail price and farm price (Cramers and Jensen, 1982). A wide margin means usually high prices to consumers and low prices to producers. The total marketing margin may be subdivided into different components: all the costs of marketing services and the profit margins or net returns. The marketing margin in an imperfect market is likely to be higher than that in a competitive market because of the expected abnormal profit. But marketing margins can also be high, even in competitive market due to high real market cost (Wolday, 1994).

There are three methods used in estimating marketing margin (Abbot, 1958): (a) following specific lots of consignments through the marketing system and assessing the cost involved at

each of the different stages (time lag); (b) submission of average gross purchase by the number of units transacted for each type of marketing agency; and (c) comparison of prices at different levels of marketing over the same period of time (concurrent method). Because the first two methods are time consuming, the study used has the third method.

2.5. Coffee production in Ethiopia

Ethiopia is endowed with a good production environment for growing coffee with a combination of appropriate altitude, temperature, rainfall, soil type, and PH. Ethiopia is the center of origin for Coffee Arabica. The country possesses a diverse genetic base for this Arabica coffee with considerable heterogeneity. Ethiopia produces a range of distinctive Arabica coffees and has considerable potential to sell a large number of specialty coffees (Adugna et al., 2008). Little of the lower-value Robusta coffee is produced in Ethiopia, being better suited for production in lower altitude equatorial climates. Coffee production in Ethiopia is almost exclusively situated in the two regions of Oromia and the Southern Nations, Nationalities, and People Regions (SNNPR) of the country Arabica.

Small-scale farmers produce coffee through a mixed farming system, which accounts for 95 percent of coffee production. It is produced under several types of production systems, including forest, semi-forest, garden, and plantation coffee (Ministry of Trade, 2012). Forest coffee is grown in the wild under natural forest cover and is gathered by farmers from trees with minor tree maintenance. Semi-forest coffee is also grown in forest conditions, but there is some limited maintenance by farmers, mostly annual weeding. This type of coffee has clearly delineated boundaries of ownership, although the trees usually are located away from agricultural plots. Garden coffee is defined as coffee from trees planted by farmers in the vicinity of their residences. It is often intercropped with other crops or trees. Plantation coffee is grown on large commercial farms, private as well as state farms. Modern production practices such as irrigation, modern input use, mulching, stumping, and pruning - are often applied in this case. While reliable recent statistics are lacking, it is estimated that these different production systems make up about 10, 35, 50, and 5 percent, respectively, of total coffee production in the country (Taye, 2012). Ethiopia's coffee production is the fastest

growing in the world, with an estimated annual average growth rate of 12 percent, compared to 7, 5 and 3 percent for Brazil, Vietnam and Colombia, respectively (Bekele, 2011).

According to PromarConsulting(2011) Total coffee production has been improving steadily during the past twenty years, with a 110 percent increase between 1993 and 2011. After a peak production of 325,800 tons in 2007, however, the volume of coffee produced dropped sharply, although the level of area cultivated continued to increase. The yields have therefore strongly diminished. An explanation could be the adverse weather that damaged the crops and a lack of proper extension services in this case. Additional explanation on why production stalled after 2007 is that a new marketing system was introduced by the government, the Ethiopian Commodity Exchange, prompting wholesalers to hold on to their supplies to see if the system would work, and wait for better prices. On the world stage, Ethiopia accounts for about 4.5 percent of global coffee production.

2.6. The Ethiopian Coffee Marketing Chain

The coffee market chain in Ethiopia is composed of a large number of actors. It includes coffee farmers, collectors, different buyers, processors, primary cooperatives, cooperative unions, exporters and various government institutions (Gemech and Struthers, 2007), and their also exist local development agents advise, inspect and support farmers during before harvests, during harvests, and after harvest so as to maintain its quality. Ethiopian coffee is sold both at local level and at the international market, the latter mainly through the newly established commodity exchange market and directly to international buyers through specialty market channels by coffee cooperative unions. Normally, all Ethiopian coffee should pass through Commodity Exchange Market. Since 2001, however, cooperatives have been granted permission to by-pass coffee auction opening the way for direct export sales (Dempsey, 2011). Coffee in Ethiopia can be exported through three main channels: a) private traders, b) farmers' cooperatives, c) large-scale farmers.

The cooperative sector has also grown considerably since 2001, especially as a result of the intervention of numerous NGOs and international cooperation agencies and the increasing international attention to fair trade initiatives. Their market share is believed to be

approximately between 4-5% and in any case less than 10%. This means that most coffee is still channeled by private traders. Small-scale coffee producers have rudimentary, low input-output agricultural and coffee harvesting practices, low incomes, weak organizations and little bargaining power (Cabi 2009); they sell their coffee to private traders or to their primary cooperatives.

Commercial growers, better able to implement intensive agro-ecological practices, aim to increase productivity and quality in order to enter the specialty markets; like cooperative unions, they are allowed by law to bypass the ECX. Although the ECX marketing system is primarily the private traders' marketing channel, both cooperatives and commercial growers use it to sell the coffee they are not able to trade through their own channels. Like the old auction system, the ECX platform also implies trading coffee at a central market in Addis Ababa, yet there are several important differences (Girma, 2011).

2.7. Coffee value chain in Ethiopia

The first stage in the coffee value chain includes process from growing to production of coffee beans involving the construction of nurseries, planting, maintenance and harvesting of mature beans (primary phase in the value chain). The second stage encompasses primary post-harvest processing of mature beans (International coffee Council, 2015) .This stage can create important added value depending on whether the red cherries undergo wet or dry processing. The third stage involves marketing and packaging. The last phase encompasses all activities included in roasting and distribution for final consumption. This last stage of value chain existence only in a limited number of coffee exporting countries.

According to (Taye, 2006 cited in Hailu, 2011), the coffee value chain in Ethiopia involves input suppliers, producers, traders (local assemblers and wholesalers), retailers, processors, exporters and consumers. Coffee trees are being grown to produce coffee cherries (McCarthy, 2007), either by smallholders (90 percent) or on plantations (5 percent). Coffee cherries are therefore picked and gathered by either producers or wage workers, and are then sold to cooperatives, wholesalers (akrabies), or collectors (sebsabies). Cherries can be pre-processed by producers, but cooperatives or private operators always intervene in the processing of coffee cherries.

Ethiopia plays an important role in the ‘global coffee value chain’ because of the fine quality of its coffees (Solomon *et al.*, 2008) but the total share of its coffee export in the world trade is less than 4% (Teshomeet *et al.*, 2019). Coffee is still Ethiopia’s number one export item. It accounts for 45 to 50% of Ethiopia’s total export earnings but its share of total export earnings has gradually declined in recent years because of increased exports of other commodities such as gold, flowers, Chat, textiles, and leather products (Abu et al.,2015). Ethiopia’s coffee export volume increased to the international market but due to reduced international coffee market prices, its revenue generated from this large volume of coffee exports has not increased significantly. Ethiopia’s coffee export destinations are 56 countries, which include Europe, USA, Asia, Middle East, Australia and Africa (Emebet *et al.*, 2013). Of which the top ten leading export destinations, from large to low import volume order, are Germany, Saudi Arabia, USA, Japan, Belgium, France, Italy, Sudan, Korea and UK. Among others, Germany shares about 21% followed by Saudi Arabia by sharing about 15% (Alemseged and Akalu, 2014).

2.8. Theoretical Framework

Value chain approach is used by many organizations across the globe. Following the pioneering contributions of (Porter, 1985) that focused on how individual firms can create value and build up their competitive advantage and Gereffi (1994) who focused primarily on the economic governance patterns in global value chains, different institutions and individuals applied value chain approach. A value chain approach presents a number of features which can serve to expand financial services into underserved rural areas (Charitonenko et al., 2005), and an analysis of the entire value chain needs to be conducted in order to better understand the extent to which financing is a constraint, where in the chain it may be a constraint, and whether there are other pre-disposing conditions impeding the access and best use of capital (Jansen, 2007). However, developing countries face many challenges that hinder from achieving value chain development like available resource, physical infrastructures and institutions (Scott, 1995). Therefore, a key condition for producers to be included in successful value chains is that they have access to market information and possess the ability to translate it to market intelligence (Biruk, 2015).

Actors networking value chain theory suggests that the value chain map should be simple, easy and clear. But the real world can be much more complex than mapped because of the involvement of different actors and channels. In order to simply understand the ground situation, the map should simply describe the flow of inputs, product and information among the actors. The analysis also should to recommend on how to strength the relationship among the actors (Kaplinksy and Moris, 2000).

2.9. Methodological Framework

According to Webber and Labaste (2009), the value chain analysis methodology focuses on three key issues: The dynamics of information in the value chain from final consumption through to primary production and input suppliers, the creation and flow of value at each stage in the eyes of the final consumer, and the nature of relationships among the actors.

Value chain analysis model integrates analysis of commodity supply chain and associated enabling environment with entry point of product and process flow, information and money flow, and the enabling environment. The value chain approaches apply six tools and steps. The analysis starts with prioritizing a commodity for value chain development and then mapping of the value chain; analysis of the value chain performance in terms of costs, prices and margins; analysis of technology, knowledge and upgrading possibilities through assessment of gaps in technology and knowledge and existing or future opportunities value. Chain governance which is used to identify stakeholders influencing governance, rules and regulations and their enforcement and finally linkages and relationships among the stakeholder is analyzed (Berg *et al.*, 2006).

A value chain map can serve as a way of identifying and categorizing key market players. Value chain maps may help to invite market players to various workshops and trainings to improve the efficiency of the chain and quality of the product. Value chain maps can also illustrate which other supporting organizations (government, NGOs and associations) are available, and which value chain levels they concentrate their services on (Biruk, 2015).

However, value chain analyses have provided a number of important insights, it has a number of limitation. Value chain analysis too often focuses simply on improvements within the given value chain, rather than on how value chains can be shifted to target different, more attractive

markets and business strategies and also it lacks the ability to analyze specific, chain-level upgrading strategies and assessment of their impacts. More specifically, objective assessment and ranking of impacts of upgrading strategies and optimal entry points for intervention are lacking (Webber and Labaste, 2009).

2.10. Analytical Framework

Models, which include type dependent quantitative variable, are called continues. Such models approximate the mathematical relationships between explanatory variables and the dependent variable that is always assigned quantitative response variables. The most commonly used approaches to estimate continues dependent variable regression models are (1) The linear regression model, (2) Multiple liner regression model (3) Two stage list square model. They are applicable in a wide variety of fields (Gujarati, 2004).

2.11. Review of Empirical Studies

2.11.1. Value chain approach

There are a number of studies that have employed the value chain approach to agricultural commodities. Fitter and Kaplinsky (2001) used a value chain analysis to examine intercountry distributional outcomes of the global coffee sector by mapping input -output relations and identifying power asymmetries along the coffee value chain. Their study showed that returns to product differentiation taking place in the face of globalization do not accrue to the coffee producers. They also found that power in the coffee value chain was asymmetrical. At the importing end of the chain, importers, roasters and retailers compete with each other for a share of value chain rents but combine to ensure that few of the rents return to the farmer or the producer country.

Value chain study conducted on off-season vegetables by Emanu, and Nigussie (2011) in Nepal indicated that the subsector faces some challenges such as unavailability of quality planting materials, lack of knowledge among the producers of the proper usage of fertilizers and pesticides as well as poor soil fertility management, lack of irrigation facilities, labor shortage, postharvest loss due the perishable nature of vegetables, limited access to reliable market information unorganized market center, limited collection centers,

and lack of proper packaging and transportation facilities. The study recommended short-term and long term infrastructural and institutional innovation to reduce the above challenges.

Ponte (2002) also used a value chain analysis to examine the impact of deregulation, new Consumption patterns and evolving corporate strategies in the global coffee chain on the coffee exporting countries in the developing world. The study concluded that the coffee chain was increasingly becoming buyer-driven and the coffee farmers and the producing countries were facing a crisis relating to changes in the governance structure and the institutional framework of the coffee value chain.

Horticulture value chain study conducted in Eastern parts of Ethiopia identified different problems on the chain (Bezabih, 2008). The major constraints of marketing identified by the same study include lack of markets to absorb the production, low price for the products, large number of middlemen in the marketing system, lack of marketing institutions safeguarding farmers' interest and rights over their marketable produces (e.g. cooperatives), lack of coordination among producers to increase their bargaining power, poor product handling and packaging, imperfect pricing system and lack of transparency in market information communications.

Dereje (2007) used value chain approach to study the competitiveness of Ethiopian coffee in the international market. The study indicates that Ethiopian farmers have low level of education, large family size with small farmland and get only 3% of the retail price in the German market. Thus, policy intervention was suggested to improve farmers' performance.

Value chain study conducted on mango by Dendena et al. (2009) indicated that the subsector faces some challenges. Among others: highly disorganized and fragmented industry with weak value chain linkages, long and inefficient supply chains, inadequate information flows and lack of appropriate production are explained as the major problems. The study recommended institutional innovation to reduce the above challenges.

2.11.2. Factor affecting coffee market supply

Majority of studies were conducted on factors affecting market supply of coffee in different parts of Ethiopia by using multiple linear regression models. Some of such studies are presented below together with their respective area and time of conduct. Wendmagegn (2014) identified that the major factors that affect market supply of coffee by using multiple linear regression analysis in Dale District of SNNPRS. The result of OLS regression model analysis pointed out that eight variables namely sex of the household head, education level of household head, quantity of coffee produced, access to extension service, price of coffee, distance to the nearest market, household non-farm income and access to market information were found to be significantly and positively affecting the market supply of coffee at household level. However, distance to the nearest market and household non-farm income affect market supply of coffee negatively in the area of study.

Antenehet *al.*, (2011) found out that inadequate coffee cultivation technology and largely ineffective extension leaving farmers unable to capture considerable additional value from their crops. Poor processing infrastructure, primarily for drying and hulling, tend to further reduce quality and diminish incomes. This source also indicated that among the different actors processors were the main actors in the system. There is no coherent grading system and standards are loose and typically defined at the local level on an ad hoc basis. This increases transaction costs and distorts value throughout the chain.

The study in Competitiveness and determinants of coffee exports by Boansiet *al.*, (2013). They revealed the effects of domestic consumption on the supply of exported coffee, and Concluded that a unit increases in domestic consumption significantly decreases the volume for both export and stock to make up for future deficits.

The study in Oromia coffee farmers' cooperative union by kumsa, (2015), revealed that has the significant impact on export marketing activity of union which is volume of coffee supplied by members to the union. This condition also makes the export marketing of the union to fluctuate.

Bizualemet *al.* (2015) used multiple linear regressions to analyze marketed surplus of coffee by smallholder farmers in Jimma zone, Ethiopia. The result of OLS regression showed that: sex of household head, coffee farming experience, access to credit, adequacy of extension services, attractiveness of coffee price, cooperative membership and non/off farm income are factors significantly and positively affecting marketed surplus of coffee in the area specified.

Jemal.H. (2013) conducted a study on coffee value chain analysis in Meta district, East Hararghe zone of Oromia, Ethiopia. Using multiple linear regressions, he identified that years of farming experience, extension contact, market information and land holding positively affect market supply of coffee in the district.

Zekariaset *al.* (2012) conducted a study on determinants of forest coffee market supply in South Western Ethiopia. Result of multiple linear regression models pointed out that price, educational level of household, transportation cost and level of production have significant impact on the market supply of the coffee in the study area.

Elias(2005)conducted study on determinants of marketed supply of sun dried coffee and identified that cost of farm labor, price of sun dried coffee and red cherry, distance to nearest market of coffee plantations, average age of plantations and availability of extension service are factors affecting market supply of sun dried coffee in the area of study.

Mohammed (2013) identified the major factors affecting market supply of coffee in Nensebo district of Oromia region using 2SLS regression econometric model. The results of his econometric analysis shows that output, access to market information, family size and distance to market as the main factors affecting coffee supply to the market. Family size and market distance affects the quantity supply negatively.

2.11.3. Marketing margin

A marketing margin is the percentage of the final weighted average selling price taken by each stage of the marketing chain. The margin must cover the costs involved in transferring produce from one stage to the next and provide a reasonable return to those doing the marketing. An example of the margin calculation is shown in exhibit (FAO, 2014). Marketing costs are incurred when commodities move from the farm to the final market, whether they

are moved by farmers, intermediaries, cooperatives, marketing boards, wholesalers, retailers or exporters. With increased urbanization and industrialization, marketing costs tend to increase relatively to the farm gate price received by the farmer, i.e. the product moves greater distances, through more intermediaries and is more sophisticated in its packaging. Marketing costs can also reflect the state of a country's development in that as standards of living increase, smaller proportions of income are expended on raw products of the farm and greater proportions are spent on additional and improved marketing services. Increasing the value added means, among other things, that more people in developed countries are involved in marketing agricultural products than in producing them.

Descriptive statistics were employed to analyze the data of marketing costs, margin and benefit analysis imply that coffee collectors incurred the lowest cost which was 7.97 birr per 17 kg. Coffee producers bear the highest cost followed by wholesalers which was 104.98 birr and 48.67 birr per 17, kg respectively. The average coffee wholesaler retained significant annual total net benefit than producers and coffee collectors. The estimated annual net benefits of a typical coffee producer, collector and wholesaler were birr 3879.881708.28, and 390257.06, respectively. This implies that coffee trading is highly profitable at the wholesale level(Dessalegn and Selemon, 2012).

(Anteneh, 2011)Found out that inadequate coffee cultivation technology and largely ineffective extension leaving farmers unable to capture considerable additional value from their crops. Poor processing infrastructure, primarily for drying and hulling, tend to further reduce quality and diminish incomes. This source also indicated that among the different actors processors were the main actors in the system. There is no coherent grading system and standards are loose and typically defined at the local level on an ad hoc basis. This increases transaction costs and distorts value throughout the chain.

(Tirufat, 2011)indicated that the farmers and primary processors not receiving fair price (for example share of processed coffee 3.81% for farmers and 3.31 for primary processors) compared to secondary processors and the international retailers (for example share of processed coffee 38.7% for secondary processors and 53.02% for international retailers.

The study by Wendemagegn (2014) has tried to analyze coffee market chain in the case of Dale district of Southern Ethiopia. The analysis of market structure indicates that the volume of coffee traded in the area was concentrated in the hand of few traders who controlled the bigger share of the market.

2.12. Conceptual framework of the study

The conceptual framework of value chain analysis is highly relevant to agricultural value chains because agricultural value chains are critically dependent on environmental resources. Also, the agricultural sector is often characterized by the prevalence of traditional social norms. In Porter (1985) framework, the value chain provides a tool that firms can use to determine their source (current or potential) of competitive advantage. In particular, Porter argued that the sources of competitive advantage cannot be detected by looking at the firm as a whole. Rather, the firm should be separated into a series of activities and competitive advantage found in one (or more) of such activities. Porter distinguishes between primary activities, which directly contribute to add value to the production of the product or services and support activities, which have an indirect effect on the final value of the product.

In the framework of Porter, the concept of value chain does not coincide with the idea of physical transformation. Porter introduced the idea that a firm's competitiveness does not relate exclusively to the production process. Enterprise competitiveness can be analyzed by looking at the value chain which includes product design, input procurement, logistics, outbound logistics, marketing, sales, and after-sale and support services such as strategic planning, human resources management and research activities. The model created by Porter identifies a number of primary and support activities that are common to a range of businesses. The value chain highlights specific activities through which firms can create value and therefore is a useful tool to simplify analysis.

A value chain consists of all stages of a technical production process as well as of the interaction between these stages. The production process starts at the stage of input supply, then covers production, processing and marketing and ends with the consumption of a certain product. It can be seen as the hard skill of a value chain. The second part of a value chain, the

interactions between the single stages, is the relationships and contractual linkages that not only determine the way the goods are traded between the different stages but are decisive for the overall character of the chain. The linkages between the stages lead to the so called governance structure of a chain that can be seen as the soft skill of it (Schipmann, 2006).

The conceptual framework of coffee value chain views as a network of horizontal and vertically integrated 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, cooperative and union) 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 credit agencies, business service providers, public research, transportation, extension agents and NGOs. Figure 1 below depicts the conceptual framework of the study which reflects possible order of analysis of coffee value chain.

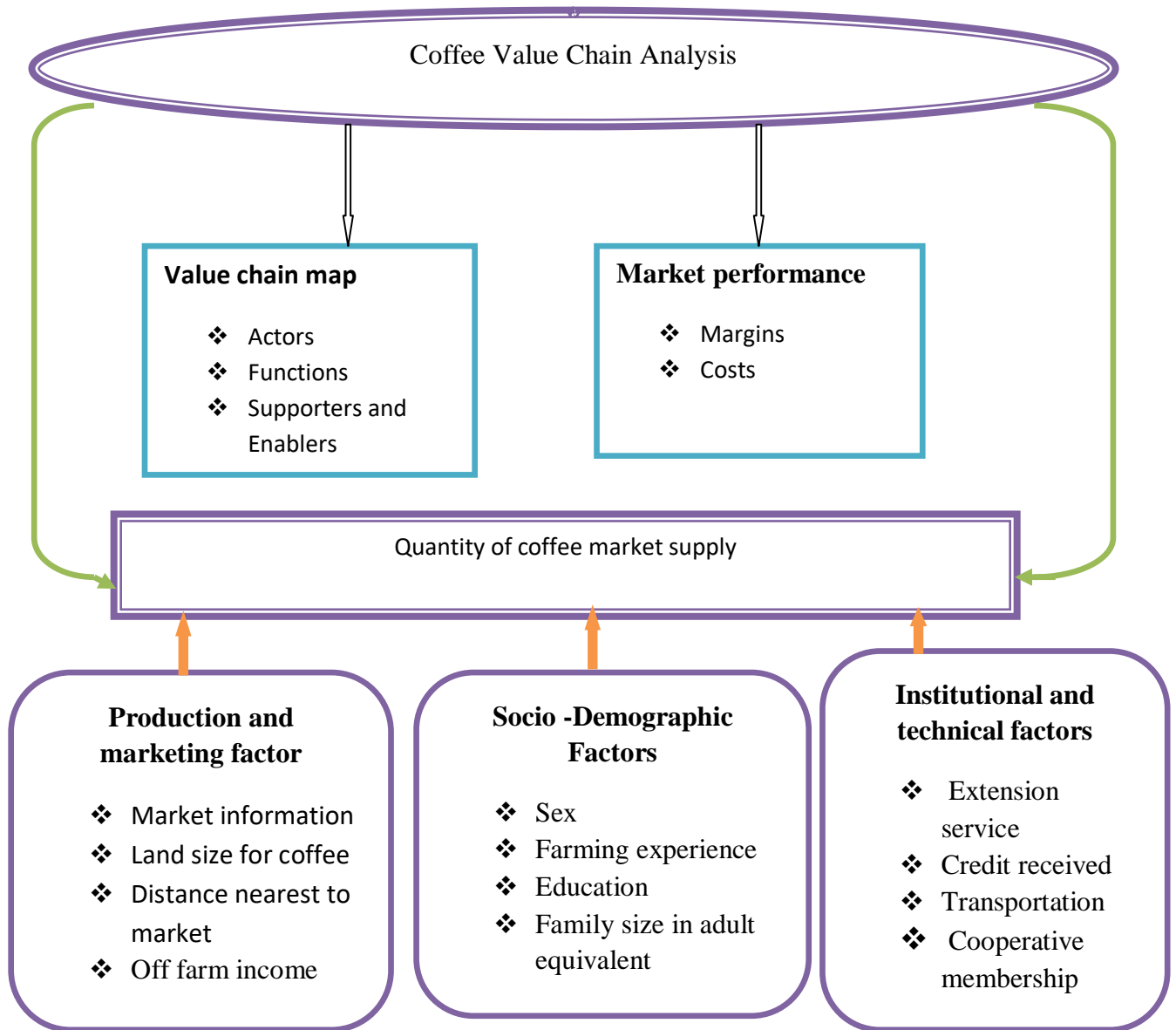


Figure 1: Conceptual framework of the study

Source: survey results; 2019

3. RESEARCH METHODOLOGY

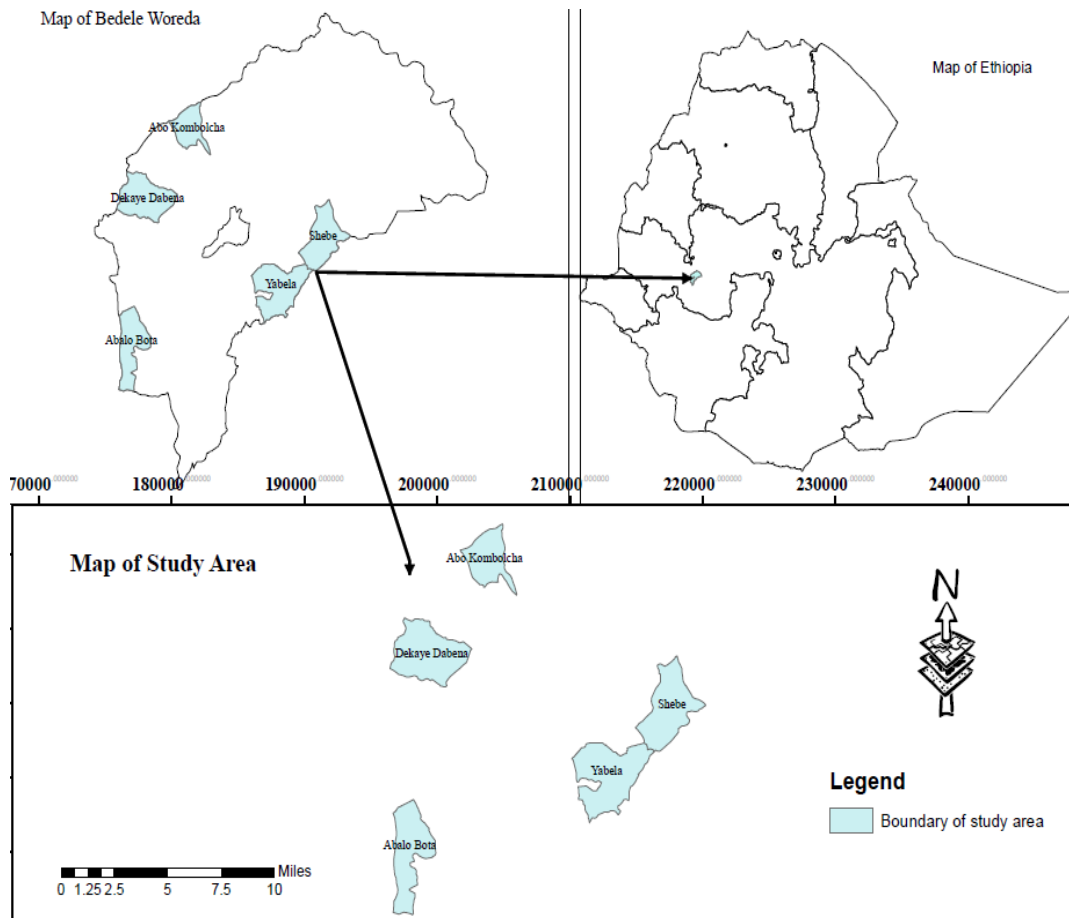
This chapter summarizes description of the study areas, data types, and source of data and method of data collection, sampling procedure and sample size. It also describes method of data analysis (descriptive, value chain analysis and econometrics).

3.1. Description of the Study Area

BunoBedele Zone is one of 20 Zones of Oromia Regional State and Bedele is found in center of zone of Oromia region and is 480 Km to West of Addis Ababa. It is bordered with East by GechiWoreda, in the west by the DegaWoreda, in the North West WolegaZone and in the south by ChoraWoreda.

The district has a total of 42 kebeles of which 41 are rural based kebele administration areas and 1 is town kebele. Total household of the district was 13,286 and the total population of the district is estimated at 108,981 of whom 53,763 are males and 55218 females (BDOARD, 2018). The altitude of the district varies from 1300 to 2,400 meters above sea level. It receives an annual rainfall of 1300-1,600 mm, and has an annual temperature range of 18-25°C⁰. The district has three agro- ecologies which is Dega (20%), Weina Dega (75%) and kola (5%).

The total land of the district is estimated to be 74,497.4 ha, out of which 4098.75ha is covered with coffee, 13,741 ha is grazing land, and 49,316.15ha for food crop and 7,341.5 ha is covered with others. The district is producing about more than 24,678.44 quintals and supplying to the market about 13,510.82 quintals of coffee per annum. The area is characterized by mild and mixed agriculture, moderately productive, food sufficient area. Crops that are grown in this district include cereal crop, pulse crop, Oil crops and vegetables. Most of the small holder farmers get their income from cash crops such as coffee, chat, spices and vegetable as well as from livestock animals and apiculture used as supplementary food in the districts (district statistic report, 2018). Map of the study area is displayed below.



3.2.1 Data types and source

For this study both qualitative and quantitative data were collected from primary and secondary sources. Primary data sources were smallholder coffee producer farmers and selected traders. Secondary data sources were from district agriculture and rural development offices, primary cooperatives, District trade and market development office, data taken from CSA, published and unpublished materials either from internet and bulletins.

3.2.2. Methods of data collection

Primary data: The data were collected formally by the method of individual interview using pre tested semi-structured questionnaire, while data from focus group discussion and key informant interview were collected by using checklists. Before data collection, the questionnaire was pre-tested to evaluate the appropriateness of the design, clarity and interpretation of the questions, relevance of the questions and time taken for an interview.

Secondary Data: By using checklists data were gathered from published and unpublished materials, district agriculture and rural development offices, input suppliers, marketing agencies, primary cooperatives, districts trade and market development office.

3.3. Sample Size Determination and Sampling Techniques

The sample for this study was drawn from all actors involved in coffee value chain such as producers, rural collectors, supplier, cooperative, and union. Based on their distribution, coffee value chain actors have been selected by using their appropriate sampling techniques.

3.3.1. Sampling technique for coffee producers

The target population of the study was the smallholder coffee producers in Bedele district. **Multistage** stagesampling procedure was used in the selection of representative sample.

First stage among 41 rural kebeles 25 kebeles were selected purposively because of their potentiality in terms production.

Second stage, with the help of district agricultural experts and development agents, from 25 coffee producing kebeles five kebeles were selected randomly.

Finally, 150 households were randomly selected from the selected rural kebeles according to probability proportional to the population size of coffee producers in the respective kebeles. The required sample size was determined by Cochran's (1977) proportionate to size sampling methodology (Mugenda and Mugenda, 2003). In this study, $P=0.11$ is taken from a previous work (Geoffrey, 2014).

$$n = \frac{Z^2 * p * q}{e^2} \quad (1)$$

Where: n = is the sample size, Z^2 = is equals the desired confidence level at 95% which is 1.96, e^2 is the desired level of precision which is 5%, p is the estimated proportion of an

attribute that is present in the coffee producers at 11%, and q is 1-p. The value for Z is found in statistical tables which contain the area under the normal curve. Accordingly, 150 coffee producers were selected from the selected kebeles.

$$n = \frac{1.96^2 * 0.11 * 0.89}{0.05^2} = 150$$

Table 1: Sample distribution and proportion coffee producer households

| Name of sample Kebele | number of coffee producers | Proportion of coffee house holds | Number of sample house holds |
|-----------------------|----------------------------|----------------------------------|------------------------------|
| Shobe | 394 | 0.23 | 35 |
| AbaloBota | 318 | 0.19 | 28 |
| Yabala | 320 | 0.18 | 29 |
| DekayeDabena | 290 | 0.17 | 26 |
| Abu Kombolcha | 355 | 0.21 | 32 |
| total | 1677 | 1.00 | 150 |

Source: Own survey result, 2019

3.3.2. Sample size determination for actors other than producer

Data from traders, cooperatives and union were also collected. The sites for the trader surveys were market towns and villages in which a sample of actor existed. On the basis of flow of coffee four markets were selected as the main coffee marketing sites for the study area. 12 suppliers, 5 collectors and 2 primary cooperatives and 1 union purposively selected. Thus our sample size is 150 farmer households, 17traders (marketing actors), 2 primary cooperative, 1union and data can also be collected from support providers.

3.4. Methods of Data analysis

Descriptive statistics, value chain analysis and econometric analysis were employed to analyze the data collected from all actors involved in coffee value chain and marketing of the study area.

3.4.1. Descriptive statistics

Descriptive statistics such as mean, maximum, minimum, standard deviation, frequencies and percentages were used in the process of examining and describing the socio-economic and demographic characteristics of the actors.

3.4.2. Value chain analysis

The analysis of coffee value chains discusses the need for enterprise development, achievement of product quality, and promotion of coordinated linkages among producers and improvement of the competitive position of individual enterprises in the market place and this study included the below analysis:

1 **Mapping** the value chain to understand the characteristics of the chain actors and the relationships among them, including the study of all actors in the chain, the flow of coffee through the chain, of employment features, and of the destination and volumes of sales. This information can be obtained by conducting surveys and interviews as well as by collecting secondary data from various sources.

2 Identifying the distribution factors' benefits in the chain. This involves analyzing the margins and profits within the chain and therefore determined who benefits from participating in the chain and who would need support to improve performance and gains. In the prevailed context of market liberalization, this step is particularly important, since the poor involved in value chain promotion are the most vulnerable.

3 Defining upgrading needed within the chain: These include interventions to improve product design and quality, invest in new technology to upgrade the process and adapt the knowledge gained in particular chain functions in order to redeploy it.

4. Emphasizing the governance role. Within the concept of value chain, governance defines the structure of relationships and coordination mechanisms that exist among chain actors. By focusing on governance, the analysis identified actors that may require support to improve capabilities in the value chain, increase value added in the sector and correct distributional distortions. Thus, governance constituted a key factor in defining how the upgrading objectives could achieve.

Analyzing performance of coffee value chain actors

The analysis of cost and margin finds the money that the actors contribute and the money that the actors in the coffee value chain receives.

Marketing margins: Identify the disparity between the cost purchasing items whole sale and income made by selling them but in agriculture marketing margin lies between the price that small organic or traditional farmers will get selling their stock directly to whole sale at harvest versus the cost of taking it to selling it retail (Mendoza,1995). Estimates of the marketing margins are the best tools to analyses performance of market.

Computing the Total Gross Marketing Margin (TGMM) is always related to the final price or the price paid by the end consumer and is expressed as a percentage. Because precise marketing costs are frequently difficult to determine in many agricultural marketing chains, the gross and not the net marketing margin is calculated. Thus, the marketing margin should be understood as the gross marketing margin. The formula to calculate TGMM is given as:

Equation 1: Total gross marketing margin (TGMM)

$$TGMM = \frac{Endbuyerprice - Firstsellerprice}{EndBuyerPrice} \times 100\%$$

The gross (profit) margin is the difference between sales revenue and cost price, expressed as percentage of the cost price or as discounted percentage of the sales price. It is useful to introduce here the idea of producer participation, farmer's portion or producer's gross margin (GMM) which is the portion of the price paid by the end consumer that belongs to the farmer as a producer. The producer's margin or share in the consumer price GMMP is calculated as:

Equation 2: Gross marketing margin for producers (GMMP)

$$GMMP = \frac{Endbuyerprice - marketinggrossmargin}{Endbuyerprice} \times 100\%$$

The consumer price share of market intermediaries is calculated as:-

Equation 3: Marketing margin for intermediates (MM)

$$MM = \frac{SP - BP}{FCP} \times 100\%$$

Where: MM = Marketing Margin (%)

SP = Selling price at each level

BP = Buying price

FCP = Final Consumer Price

3.4.3. Econometric analysis

Econometric analysis was used to estimate the causal relationship between the dependent variable and the explanatory variables. Econometric analysis of the data was done with Stata 14 software. Econometric model specification of supply function in matrix notation is the following

Model specification

Multiple linear regression model (OLS) was appropriate to analyze factors affecting quantity of coffee supplied because all sampled households producing coffee participated in marketing. However, when some of the assumptions of the Classical Linear Regression (CLR) model are violated, the parameter estimates of the above model may not be Best Linear Unbiased Estimator (BLUE). Thus, it is important to check the presence of heteroscedasticity, multicolliniarity and endogeniety problem before fitting important variables into the regression models for analysis.

Model equation: The model expresses the value of a dependent variable (market supply of coffee) as a linear function of more than one independent variables and an error term: which is specified as; $Y_i = \beta_i X_i + U_i$, where, Y_i = quantity of coffee supplied, β = a vector of estimated coefficient of the explanatory variables, X = a vector of explanatory variables, U_i = disturbance term.

Hypothesized explanatory variables represented by “X” are described as follows. X_1 =market information X_2 =coffee farming experience X_3 = Family size X_4 = distance to the market X_5 = Education level of household X_6 = Size of land allocated for coffee production X_7 = Credit use X_8 = extension service X_9 = Non farm income X_{10} = Member to cooperative X_{11} =transportation

3.5. Hypothesis, Variables Selection and Definition

In the case of identifying factors influencing coffee supply to the market and the main task was exploring which factors potentially influence and how these factors are related with the

dependent variables. Therefore, the following dependent and independent variables were hypothesized in the study.

Dependent variable

Quantity of coffee supplied: It is a continuous dependent variable used in the multiple linear regression model equation. The actual quantity of coffee supplied in the 2017/18 production season by individual households to the market, measured in quintals.

Independent variables for quantity of coffee supply

Education level of household head(EDUCTN): It is continuous variable measured in terms of years of schooling that the household head was attended and hypothesized to affect market supply positively. This is due to the fact that a farmer with good knowledge can adopt better practices and would increase marketable supply. A study conducted by Zekarias et al. (2012) indicated that, education positively and significantly affected the market supply of coffee. Therefore, this variable was expected to affect market supply of coffee positively.

Number of extension contact (EXTCON): It is continuous variable measured by number of days that household gets extension contact monthly. Extension services provide different support for all stakeholders' of coffee production and marketing. It is expected that extension service widens the household's knowledge with regard to the use of improved technologies and has positive impact on decision to participate in coffee production and coffee sale volume. Therefore, this variable is hypothesized to influence market supply of coffee sales positively. Study conducted by Wendmagegn (2014), indicated that extension service positively and significantly related to the volume of coffee supplied to the market, Engida (2017) found positive relationship between market supply of coffee and extension contact. (Elias, 2005) Used in his study the appropriate extension service can affect coffee supply to the market positively. Therefore, in case of this study, it is hypothesized that extension service in coffee production and marketing would have positive relationship with market supply of coffee.

Size of land allocated for coffee production(LNDSZE): Is continuous variable which refers to the proportion of total land employed for coffee production. Land is important factor of

production which highly determines agricultural productivity and also as producers employ more land, they produce more and are highly likely to supply more keeping other factors constant. This assumptions supported by different empirical evidences. Samuel *et al.*, (2016) found positive and significance relationship between sizes of land allotted for coffee and volume of its market supply. Therefore, this variable is expected to affect market supply of coffee positively.

Family size (FMLSZE): It is a continuous variable measured in Adult equivalent. However, Family size in the study area might positively affect on marketed supply of coffee. Family is an important source of labor supply in rural areas. It is expected that households with large family members have better advantage of being able to use labor resources at the right time, particularly during peak harvesting period. Accordingly, families with more household members tend to have more labor which in turn increase coffee production and then increase coffee market supply. On the other hand, family size may also decrease market supply because high proportion of the product would be used for consumption. Mohammed (2013) found negative and significance relationship between family size and volume of market supply. But in case of this study, family size is expected to positively influence the volume of coffee supplied to the market.

Credit use(CRDUS): It is a continuous variable which represent the amount of credit taken by an individual household for coffee production purposes. Farmers who receive credit had more possibility supply coffeethan those who do not receive credit. According to Mekonin (2015), getting access to credit increases market supply. According to his study, a reason for accessing credit is to recruit transportation facility for supply of coffee to the market. The implication is that if farmer receive credit, he or she can easily access transportation facility which assists them to more supply.

Distance to the nearest market(DNMKT): It is a continuous variable and is measured in km by which farmers are far from the market. If the farmer is located closer to the market, the lesser would be the transportation cost and time spent to travel and vice versa. A study conducted by Mohammed (2013), Jemal (2013), Engida (2017) identified that distance from the nearest market affected quantity of coffee marketed significantly and negatively. In case

of this study, it is also expected that distance from the nearest market would affect market supply of coffee negatively.

Ownership of means of transportation (OWNTRPN): It is a dummy variable which takes a value of 1 if the household owned pack animals (Mule, Horse and Donkey) for transportation facility and 0 otherwise. The availability of transportation facilities helps farmers to supply their product from long distance and remote area to the available market easily. Mekonin (2015) found that ownership of transportation means significantly enhance marketed supply of coffee. Therefore, it was hypothesized that households' have Ownership of means of transportation is positively related to marketed surplus of coffee.

Membership to coffee cooperative (MEMCOP): It is a dummy variable and takes the value of 1 if the household is member of coffee cooperative and 0 otherwise. Cooperatives are expected to improve understanding of members about market and strengthen the relationship among the members. Bizualem et al. (2015) found that those who are members of cooperatives might be motivated with double payment (dividend payment besides actual price of commodity) than non-members and motivated to increase the quantity of coffee marketed. Therefore, this variable was expected to be associated to market supply of coffee positively.

Coffee farming experience (CFRMEXPR): Is a continuous variable measured in number of years. A household with better experience in coffee farming and processing is expected to produce more amounts of coffee than the one with less experience and, as a result, is expected to supply more amounts of coffee to market. Jemal (2013) found that number of years that a farmer had been growing coffee is positively and significantly associated with market supply of coffee. Therefore, in case of this study, farming experiences is expected to affect market supply of coffee positively.

Off farm income (OFRMINCME): It is continuous variable measured in amount of birr obtained from off farming activities or income out of own farm by the household head. This income may strength farming activity or reluctant to produce coffee to generate money from coffee rather than getting income from other activities. However, getting income from off farming activity is assumed to have direct or inverse relation with marketable surplus. Bizualem et al. (2015) found an increase in the off-farm income, increase coffee marketed surplus and income obtained from businesses other than farm activities would finance the

production and enhanced marketed surplus. Hence, off farm incomes was expected to influence market supply of coffee either negatively or positively.

Access to market information (MRKTINF): The variable is considered as dummy. Assign 1 if a household got information and 0 if not. Farmers marketing decisions are based on market price information, and poorly integrated markets may convey inaccurate price information, leading to inefficient product movement. Those who have access to dynamic information produce more coffee and supply to the market. Therefore, it was hypothesized that households' market information is positively related to marketed surplus of coffee.

Table 2: Summary of type, measurement and expected sign of variables

| Variables | Types | Measurement | Sign (expected) |
|------------------------------|------------|--|-----------------|
| Dependent Variable | | | |
| Quantity of coffee supply | Continuous | quintals | |
| Independent variables | | | |
| Education status of HH head | Continuous | Number of schooling years | + |
| Number of Extension contact | continuous | number of contact per month | + |
| Land allotted for coffee | Continuous | Hectare | + |
| Family size | Continuous | In adult equivalent | + |
| credit use | Continuous | Birr | + |
| Distance to nearest market | Continuous | Km | - |
| Ownership of transportation | Dummy | 1 for HH having transportation and 0 otherwise | + |
| Membership to Cooperative | Dummy | 1 if HH are members and 0 otherwise | + |
| coffee farming experience | continuous | year | + |
| off farm income | Continuous | Birr | +/- |
| access to Market information | Dummy | 1 for HH get information and 0 otherwise | + |

Source: survey results; 2019

4. RESULTS AND DISCUSSION

This section deals with the major outcomes of the study. It is divided into four main sections. The first section deals with descriptive statistics of the sample households. The second section presents value chain analysis of coffee which includes actors and their roles, value chain map, value chain governance and value chain upgrading. The third section presents marketing channel and performance analysis of the value chain actors which comprises of marketing channels, marketing costs and margins and benefit shares of actors in coffee value chain. The fourth section presents results of econometric analysis which contains the factor affecting market supply of coffee using Multiple Linear regression.

4.1 Descriptive Results

4.1.1 Demographic and Socio- economic characteristics farmers

From the total sample households about 87.1% were male headed and 12.9% were female headed. Religion of the sampled farmers indicates 31 % of the respondents were Muslims, 36.5% were protestants and 32.5 % were orthodox. It also shows that about 91.5% of the respondents were married, whereas 8.5% were a combination of single, divorced and widowed. This indicates that most of the respondents were married and being married is important to undertake farming activities, to live a sustainable life as well as to collaborate more to the society in social life. The survey result showed that only 8.6 percent of the sample households took credit for coffee production. This indicates that most of the households were not participating in the credit receiving. The amount of credit ranges from 2,500-3000 birr for a production year. The surveyed report also confirms that transportation facilities are one of the basic inputs to undertake production and marketing activities in the study area. Due to this reason about 87.5% of the sampled households had own transportation facilities to transport input from factor market and outputs to product market during the surveyed year. Moreover, the results revealed that the main means of transport were transport animals, vehicles. Regarding cooperative membership, 66 % of the sampled households were members of cooperatives and 34 % were not organized under cooperatives.

From the survey result access to market information shows that there is no system in place for systematically collecting, analyzing and disseminating information relevant to the needs of different actors. However, about 87.3% of households indicated that they had information about coffee market. For instance, they hear about price and buyers of coffee from local market, other fellow farmers, the primary coffee market, DAs and from radio. The remaining 12.3 % of producers had don't have any idea about price and supply of coffee in the central or ECX market.

Table 3. General Characteristics of sampled farmers (dummy variables)

| Description | frequency | Percentages (N=150) |
|------------------------|-----------|---------------------|
| Sex | | |
| Male | 131 | 87.3 |
| Female | 19 | 12.7 |
| Religion | | |
| Muslims | 47 | 31 |
| protestant | 54 | 36.5 |
| Orthodox | 49 | 32.5 |
| Marital Status | | |
| Single | 9 | 6 |
| Married | 137 | 91.6 |
| Widowed | 4 | 2.5 |
| own transportation | | |
| yes | 131 | 87.3 |
| market information | | |
| yes | 124 | 82.7 |
| Cooperative membership | | |
| yes | 99 | 66 |

Source: Own survey result, 2019

Educational status of the household head can influence how household head accepts new idea of production and searches for efficient markets for their products. The mean year of schooling of respondents was 3.4 years with a standard deviation of 3.12 with maximum year of schooling of 12 years. The survey data also showed that the family size of the sampled households in terms of man equivalent varies from 1 to 9 with an average household size of 3.8. Regarding to the age, the overall mean age of the sample household heads was 48 years with standard deviation, maximum and minimum age of 11.2, 76 and 28, respectively. The mean distance that sample households far from the nearest market at the time of the survey was about 16.7 kilometers, with the minimum and maximum distance of 10 and 29 kilometers, respectively. Extension service provision was expected to have direct influence on

the production and marketing behavior of the farmers. The mean extension contact frequency provided for coffee producing farmers was found to be 1.82 day/month with standard deviation of 0.84 as mentioned in Table 4. The level of coffee farming experience is taken to be the number of years that an individual was continuously engaged in coffee production activity. The mean coffee production experience of respondents was 14.5 years with maximum being 26 and the minimum experience of 3 years.

Sales of chat, sheep and oxen fattening, petty trade, daily labor and livestock byproduct were found to be the major off farm income generating activities in the study area. About 109(72.7%) were participating on off farm income activities and 41(27.3%) were not participating on off farm income activities. The mean cash income other than coffee production was about Birr 6991.26 with standard deviation of 2319.4. The maximum cash income other than coffee production was Birr 10300. Total land allotted for coffee indicates that the average area of land covered by coffee per household was 0.76 hectares with standard deviation of 0.67. The minimum and maximum land allocated for coffee production was 0.13 and 4 hectare respectively. To examine the volume of coffee supplied by households were asked about the total volume of coffee produced and proportion of coffee consumed out of total produced amount and the remained is regarded as the sold amount. Moreover, in the analysis both Red cherry coffee and dry coffee are considered by using local conversion factor as obtained from survey where 100kg of dry cherry coffee is equivalent with 50kg of clean. Minimum coffee harvested in 2018 by the sample farmers of the study area was 1.15 quintals, maximum was 22.9 quintals. From annual coffee product minimum coffee sold was 0.85 quintal, maximum was 19.4 quintals. Household coffee consumption obtained from these sample farmers shows that minimum was 0.3 quintal and maximum was 3.5 quintals.

Table 4: Socioeconomic characteristics of sampled farmers/ continuous variables

| | Mean | Std. Dev. | Minimum | Maximum |
|--|----------|-----------|---------|---------|
| Educational level (Years of schooling) | 3.4 | 3.12 | 0 | 12 |
| Age of a household head (Years) | 48 | 11.2 | 28 | 76 |
| Family size (Man equivalent) | 3.82 | 1.39 | 1 | 9 |
| Distance from nearest market (Km) | 16.7 | 3.1 | 10 | 29 |
| Off/non-farm income | 6991.2 | 2319.4 | 1470 | 10300 |
| farming experience | 14.5 | 4.8 | 3 | 26 |
| land allocated for coffee | 0.76 | 0.67 | 0.13 | 4 |
| frequency of extension contact | 1.82 | 0.84 | 0.33 | 4 |
| Amount of credit (ETB) | 6564.516 | 2792.703 | 2700 | 13200 |

Source: Own survey result, 2019

4.1.2 Demographic and socio-economic characteristics of traders

The survey (Table 5) below revealed that in the area of study, coffee trading activity is dominated by male headed traders. This is due to the nature of the business and personal attitude of the traders themselves. Accordingly, about 82.4 % of traders are male and the remaining 17.6% share is covered by female headed traders with average age of 45.8 years old. With respect to their marital status, majority of the traders are married and very small proportion (11.7%) of the existing traders are not married. The average family size of traders is about 3.4 with maximum and minimum of 6 and 2 people in each household respectively. Mean educational grade completed by the traders is 6.8 which is approximately grade 7 with corresponding standard deviation of 3.2. With respect to the source of capital, 61.76 % of coffee traders start up their business by their own capital and about 38.24 % of them start with loan.

Table 5: Demographic& Socio-economic characteristics of sampled traders

| Dummy and categorical variables | frequency | percentage | | |
|---------------------------------|-----------|------------|--------|---------|
| sex (male) | 14 | 82.4 | | |
| marital status(married) | 13 | 88.3 | | |
| Continues variables | | | | |
| Variable | Mean | Std. Dev. | Min | Max |
| Age of traders | 45.9 | 14.3 | 23 | 76 |
| Family size | 3.4 | 1.2 | 2 | 6 |
| Education | 6.9 | 3.3 | 0 | 12 |
| Initial capital for suppliers | 158420.6 | 31214.06 | 100000 | 210000 |
| Initial capital for collectors | 61083.33 | 13078.29 | 45000 | 80000 |
| Working capital for supplier | 773529.4 | 383460.2 | 400000 | 2000000 |
| Working capital for collector | 115833.3 | 22003.79 | 90000 | 150000 |

Source: Own survey result, 2019

Initial capital: The result indicated that the mean of initial starting capital of the supplier and local collector of 158,420.6 birr with standard deviation of 31214,06 and 61083.33 birr with standard deviation 13078.29 for respectively. The minimum and maximum initial capital of sample local collector were 45,000 birr and 80,000 birr and the minimum and maximum initial capital of sample coffee supplier 100,000 birr and 210,000 birr respectively.

Working capital: The result revealed mean working capital of coffee collectors and suppliers was 115,833.3 birr and 773,529.4 birr respectively. The minimum and maximum working capital sample coffee collector were 90,000 birr and 150,000 birr and the minimum and maximum working capital sample coffee supplier were 400,000 birr and 2,000,000 birr respectively. Moreover, coffee collectors had no store they either store in their residence or may immediately deliver to coffee suppliers. Most traders in the District had no skilled manpower. Thus indicates that the organizational capacity (financial, Physical, and skilled

manpower) of coffee supplier of Bedele District being low. However well build store, financial capacity, skilled manpower are the major important ingredient for sector growth in particular and for county's development in general.

Coffee maintenance practices by producers

Applying good agricultural practices enables to increase productivity and quality of coffee yield. Maintenance operations that the study area farmers have been practicing are weeding, manure compost application, pruning, mulching and the like. Value adding starts at coffee seed preparation ending to marketing. The farmers have been planting improved coffee seedlings and applying maintenance activities in order to improve their annual coffee yield and to keep coffee quality. At the time of data collection we have seen that most farmers (92%) practicing maintenance activities on their coffee farm such as manual weeding, hoeing, compost applying and rarely few farmers practicing coffee pruning and stumping. The respondent farmers replied the source of labors for their coffee farm maintenance; harvest and processing practices that they are using include family, hiring, debo, and one to five cooperative. Debo or one to five cooperative/dado form; hiring labors is mostly for harvesting and rarely processing. According to this condition 65% of the respondent farmers replied that they used family labors, 3.5% only hiring, 15 % used both, 2% by debo and 14.5% used one to five cooperative for their coffee harvesting and preparing.

Coffee harvesting and value adding practices by the producers

Coffee value adding practices passing through processing, warehousing, packing, transporting to market and selling. The activities they have been applying include selective hand picking red cherry, sorting, drying coffee on the raised bed or ground, conditioning, filling in to sacks and keeping at house and transporting to market. But most of the respondents replied that they do not follow all these practices; few of them said they sold their coffee at red- cherry to cooperative, some said after drying to dry cherry to cooperative and traders. Some farmers prepared coffee seeds and sold to nursery station.

Farmers harvested coffee of different stages in the study area, such as green, red and black cherries, which mainly affects the quality of the coffee. The analysis supported by Wintgens (2004) noted that inferior coffee quality is mainly due to mixing of green, partly ripe, red and

black cherries. In post-harvest practices the major factors affecting the quality of coffee mainly harvesting, mixing coffee with (water and soil) and storage practices, which highly deteriorate the quality of the coffee in the study area. According to different scholars, Endale et al. (2008) selective hand picking yields the best quality green coffee by declining the fraction of defects or strip harvesting coffee.

4.2. Results of coffee value chain Analysis

The value chain map highlighted the involvement of diverse actors who are participated directly or indirectly in the value chain. The direct actors are those involved in business activities in the chain (input suppliers, producers, traders, cooperative and union) and indirect actors are those that provide financial or non-financial support services, such as credit agencies, business service providers and government, researchers and extension agents.

4.2.1. Coffee value chain actor and their characteristics.

Primary actors

The primary actors in coffee value chain are input suppliers, producers and traders (collectors, suppliers, cooperatives and union). Each of these actors add value in the process of changing product title. Some functions or roles are performed by more than one actor, and some actors perform more than one role.

Input Suppliers: At this stage of the value chain, there are many actors who are involved directly or indirectly in input supply in the study area. Currently OoARD, local market, Jimma research center Metu branch, NGOs, primary cooperatives and private seedling producers are the main source of input supply. The district office of agriculture and Rural development was the major source of input supply for coffee producing farmers in the study area.

About 9 % of the households use coffee seedling from seedling station established by OoARD of the district at kebele level. Others about 87%, 2.5% and 1.5% of the sample households were using seedling obtained from private seedling producers, Jijima research center, and world vision respectively as the source of seed/seedling supply. All of sampled respondents

using poor quality implement and packing materials available at the local market incurring higher cost/price which constrained the production as well as the quality of coffee. The existing stockholder not supplying farmers with quality farm equipment and materials needed for coffee production and marketing practice. Coffee producers in the study area use local, improved and both type of coffee variety. Out of 150 sample households, about 35 %, 22 % and 43 % of them were using local variety, improved variety and both improved and local variety coffee seeds respectively (Table 6).

Table 6: Type of coffee seed variety used by sample households.

| Type of coffee variety | Frequency | Percent |
|------------------------------------|------------|------------|
| Local variety | 53 | 35 |
| Improved (74-165 and 74-4) variety | 33 | 22 |
| Both | 64 | 43 |
| Total | 150 | 100 |

Source: Own survey result, 2019

Coffee producers/farmers: According to proclamation No.602 (2008) this category or participants constitutes small scale coffee farmers, large enterprises and private investors. They are the main source of nation coffee production. According to Molina (2011) 90% of the national coffee production comes from small scale coffee farmers and the other 10% comes from big plantations and investors. All coffee producers in Bedele district are small scale producers. These producers are the major actors who perform main value chain functions start from farm input preparation on their farm to post harvest handling and marketing. Major functions in which coffee perform along the chain include land preparation, planting, weeding, pest controlling, harvesting and post-harvest handling. Appropriate climate condition provides good opportunity for the production of coffee and makes it highly demandable and competitive in the area. The exploitation of this opportunity by producers however, has not been achieved due to low quality supply resulted from offering low price for their produce in the existing market.

Local Collectors: Local collectors operate in the district and most of them are involving in informal way. They are engaging in purchasing coffee from farmers and directly sell it to suppliers. Mostly, the value that they add is through collecting and assembling, storing and transporting coffee during the time of high selling price to get premium benefit. Some of them face shortage of capital so that they operate as agents of whole seller while others do have sufficient capital to buy coffee from each primary market.

Suppliers: They are mainly involved in purchasing coffee from local collectors and producers in larger volume than any other actors and supplying it to exporters through ECX. They have also their own better storage, transport and communication access than other traders. Then they add value through assembling, storing, processing and transporting coffee, supply to ECX warehouse at Bedele branch for inspection of quality and grading. Finally they pass the product to export market through their agent in ECX, According to the Bedele district trade and market development office, the requirements to be met to qualify as a traders are a working capital of 500,000 Birr, a coffee drying cemented field and a store, and their license is subject to renewal every year on a condition of good performance in the coffee market. The result of this study revealed that there are 12 legal coffee suppliers in the district who exercise in the way described above.

Primary cooperatives: According to the international cooperative alliance, a cooperative is an autonomous association of persons united voluntary to meet their common economic, social and cultural needs and aspirations through a jointly owned and legally controlled enterprise. A cooperative tackles market failures, and by pooling resources the position of the local market is stronger than that of the individual farmers (ICA, 2011). They are fourteen primary cooperatives found in Bedele district was indicated from survey 2019. From existing primary cooperatives two of them those participating on coffee marketing were selected for this survey this are Soota and Sidisa primary cooperatives, which they play a vital role in coffee value chain as key actors. Soota consists of 396 members with capital of 1, 500,000 birr and Sidisa has 315 members with capital of 2,300,000 in cash. These cooperatives purchase both red cherry and dry cherry from members and non-members. Primary cooperatives in the study area

perform collecting, storing, transporting and processing and selling both dry cherry and red cherry.

Cooperative union: It engaged in coffee marketing, service deliberation, input distribution, and training primary cooperative members. The cooperative union purchase coffee from primary cooperatives and deliver through ECX to oromia coffee farmer's cooperative union. One opportunity in the study area is location of the union is located there, so that every information flow related to coffee production and marketing make accessible to especially farmers to get better benefit for their produce. Moreover, primary cooperatives are more beneficiary as they get every information and other services due to proximity to union in the area.

Coffee processors: In the Districts, simple local processing of coffee is carried out by traders and union. Both dry and wet processing is carried out at the processing station by the indicated actors. Major coffee processing carried out in the study area includes hulling, pulping, sorting, grading, packing and weighing. The result of this study shows that 2 primary cooperatives and 4 private coffee traders carry out such local processing in the District. Therefore such processing is undertaken using total of 6 coffee processing machines owned by private traders and cooperatives. Out of 6 coffee processing machines, 4 were dry processing and 2 were washing machines.

ECX: ECX is expected to create market integrity through: introduction of viable products with certified grade and standards; membership based trading; enforcement of standardized terms and conditions for enforcement of contracts in accordance with trading rules. ECX has warehouses to guarantee the availability of coffee. Wholesalers take their coffee to the warehouses and receive a receipt. ECX also grades the coffee and ensures its quality. At the auction, buyers and sellers only know the grade and kind of coffee, not who produced it. ECX also ensures that buyers have sufficient funds available for trades at the auction (Dahlberg, 2011,). There are several previous examples of buyer's not paying, coffee not being delivered from sellers, and farmers suffering from forged checks. ECX has been implemented to eliminate these problems and to create a safe and secure market place to benefit for everyone.

“Farmers are now better informed about prices at the ECX through mobile phones and radio and are no longer cheated” (Dahlberg, 2011).

4.2.2 Enabling environment/supporters

Such actors are those who provide supportive services including training and extension, information, financial and research services. According to Martin et al. (2007), access to information or knowledge, technology and finance determines the state of success of value chain actors. OoARD, World vision, Jimma research center Metu brunch, primary cooperatives, local market, transportation, micro finance, world vision and private seedling growers are the main supporting and enabling actors who play a crucial role in the provision of such services in study area.

Office of Agriculture and Rural Development: This actor plays an important role in coffee production and increasing marketing. This sector contributes for coffee production by structuring, providing and coordinating extension or development agents for each kebeles households under their supervision. This organization provides training, adoption of new technologies to increase productivity of this essential to raise farm income.

ii. Financial services providers

Oromia Credit and Saving Institution: It is a part of microfinance institution which provides credit services for smallholder coffee producers in the study area. It is a major source of financial service farmers and urban peoples including small trader, but not for large traders because of they are efficient to get credit from banks and it stands to finance smallholders and financially inefficient actors. And also this institution helps its users by holding saving money which is given to them when they leave out their service.

Banks: It is the most financial source for supplier and primary cooperatives by providing credit services in a long term or short term. Most of supplier in the district is getting credit service from this institution and from each other. It is the only source of credit for larger traders in the district because of the prefers huge capital for trading activities than local collectors. Also it is source of credit for cooperatives. But this sector is not providing credit service for smallholder farmers especially for coffee production and marketing related issues

because they lack collateral assets and the sector was not working in rural areas to finance this important crop for both national economy and consumption.

Office of District Trade and Market development: It plays a major role in coordinating all private traders and cooperative/union by providing licenses, training, collecting legal payments from traders. This organization coordinates and manages each and every coffee traders in the district and works to create competent firms who create job opportunity in a sustainable manner.

4.2.3. Coffee value chain map in the study area

Functional and institutional analysis approach of a value chain mapping was used to identify the different actors involved in the coffee value chain, and to understand their roles and linkages.

For this study identified actors, their functions, supporters, financial flow between actors, information input service flow and product flow was included. The current value chain map of coffee in Bedele district is depicted according to the below figure. Finance, service, product, input and information flows between each actor through buying and selling as well as giving credit and selling the product as a credit for each other and while product flows to one way from one actor to others.

But the flow of information between actors for the study area was mapped by using two arrows (two directions). Input and service flow was mapped by one arrow (one direction) which indicates inputs flows from suppliers to farmer for production rather than more exchange activities and also service flows on one direction. And also product flows on one direction on each channel from producer up to ECX. The below map of coffee value chain in study area also shows respective functions of actors along the value chain.

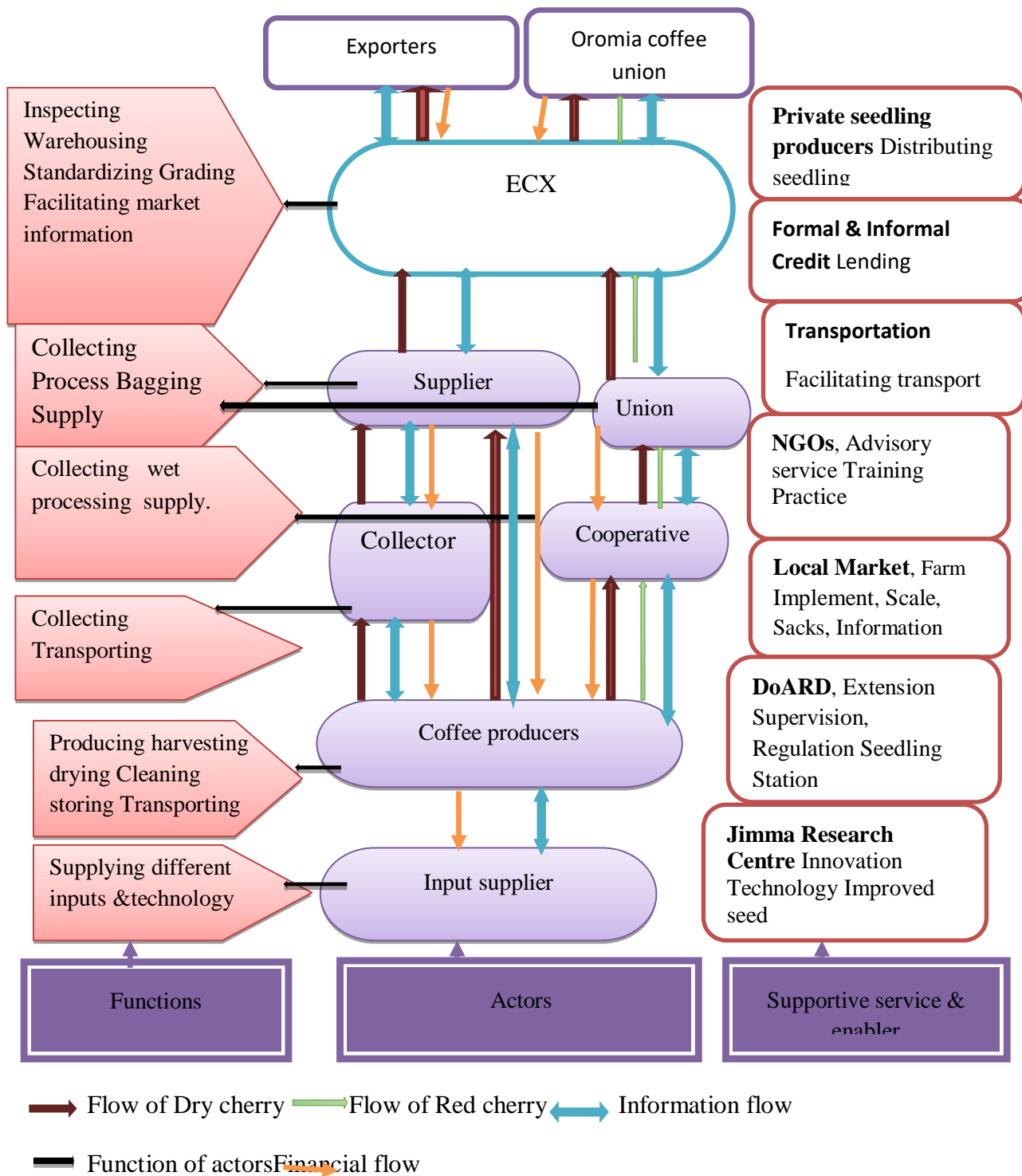


Figure 3: Coffee value chain map

Source: Own survey design, 2019

4.2.4 Value Chain Upgrading

In the district some of the sampled producers engaged in product upgrading activities by enhancing productivity by producing coffee in more efficient and profitable way. 35% of producers were used local seed for production of coffee and due to non availability only 22% farmer used improved coffee seed. The use of improved seed and fertilizer by smallholder producers may be considered as product and process upgrading which introduces new products and increasing efficiency of internal process for production. According to Humphrey (2004), upgrading the value chain consist of 3 primary modes. Downstream processing can be further improved by taking new functions in the value chain (e.g. to process coffee instead export the green bean). Improve the quality by moving into new (higher-level) product lines such as organic coffee or coffee with certification. And enhance productivity by producing coffee in more efficient and profitable way (Humphrey, 2005).

Improvement in processing system is important to upgrade the coffee value chain. Many smallholder farmers in the district only applied the simple methods to produce coffee. The final product at the farm level is predominantly unsorted and ungraded coffee. Being a highly desirable export cash crop, coffee requires greater attention during both pre and post-harvest handling from the point of production to the final market. The present result similarly reported by Tesera (2011), poor quality coffee created during the time of harvesting and processing system at different producers and suppliers resulted in deterioration of coffee quality.

In the district because of lower level of upgrading activities are functioning coffee produce in the district were less priced and has low demand in comparison to others. This leads low profits gained by the farmers. Coffee quality can be maintained is through use of improved variety. In order to use improved variety, there would be adequate supply from the concerned bodies. But in case of Bedele District, there is shortage in supply of such improved variety of coffee which is highly hindering the producers of the area from producing quality coffee. According to Humphrey (2004), for those producing coffee for differentiated markets,

there seems to be a chance of gain. There are also technical related problems of coffee production as identified by this study. Weak linkage between research, extension services and producers and limited communication, infrastructure and logistics services are the common types of technical problems. The role of government officials and associated stakeholders is important to deal with this problem. Although training is regularly given to the farmers, continuous assistance is needed in order to monitor the whole process of coffee production and expansion of productive capacity, Dissemination of modern input technologies is essential in increasing the productivity of coffee which enhances the volume sold of coffee. Source of advisory in regular basis indeed makes a distinct effect on upgrading strategy is an agreement between chain actors on joint action to upgrade. Economic motives are one of the factors that restrains the farmer to upgrade their processing system. Nevertheless, the farmer's willingness to adopt the advanced method can be expected if training is given from the related stakeholders. Generally in the district no upgrading is done on marketing, functions, interaction between actors, improving win-win strategies, and improvement of poor participation and the way coffee market is functioning is not competent.

4.2.5. Value chain governance along coffee value chain

According to GTZ (2007) report indicates that forms of a chain governance range from spot market to vertical integration of the entire value chain. Analyzing the existing business linkages includes judging the intensity and sustainability of cooperation, the existence of lead firms and their attitude and commitment. A related point is the analysis of conflicts arising from differences in negotiation power, asymmetric information and competition for resources between value chain actors. Business linkage studies also include the degree of sector organization, especially the capacity of commercial business associations. Chains are characterized by a dominant party, known as the lead firm, which coordinates the interaction between the links in the chain and becomes responsible for upgrading activities in the individual links. The role of 'governance' can undertake either by buyer-driven chains or by producer-driven chains (Gereffi, 1995).

The dominant value chain actors play facilitation role. They determine the flow of product and level of prices. In effect, they govern the value chain and most other chain actors subscribe to the rules set in the marketing process. The study result indicates that the suppliers are the key value chain governors due to the economies of scale. About 74% of the

households reported that as suppliers are governing the chain by influencing upstream and downstream chain actors; and all suppliers reported key actors through richness and reach. The districts' market is heavily dependent on exporters for coffee export, and therefore the coffee value chains are highly influenced by the suppliers. Due to the lack of a economies of scale, not allowed to sell to exporters and minimal bargaining power, farmers are forced to sell their product at the price offered by traders. Traders in the district usually refer to ECX markets for price fixation. Traders are always complaining that the farmers are not providing quality product while farmers are blaming the traders for offering low price. Producers are price takers and they can hardly negotiate the price as the price of coffee is set at ECX according to the quality and grade level of coffee. Still worse, also they are not allowed to store coffee for long time to seek higher prices.

The coffee value chains in the study areas are characterized by a highly fragmented. Generally there were weak integration between coffee traders and producers in study area because of farmers were less trusted with price set by traders for coffee produce. There were also information gap about the end price of coffee between producer and traders which causes negative vertical integration between all actors of coffee value chain which leads farmers to earn less profit share in relation to other actors. According to focus group and key informant respondents, traders earned more benefit from coffee than producer due to farmer pays cost of production which are counted in monetary terms and uncounted while traders occurs only transportation costs, brokers, storage, taxation, loading/unloading which covered in short period of time.

4.3. Results of margin analysis

4.3.1. Coffee Marketing Channels

The analysis of marketing channels was intended to know the alternative routes that the product follows from the point of origin to its final destination. As stated in Mendoza (1995), marketing channels is the sequence of intermediaries through which crop passes from farmers to ultimate consumers. According to statistical information obtained from Bedele district office of Agriculture and rural development in 2017/2018 crop season the estimated volume of production of red cherry and dry cherry coffee type was about 945.75 quintals and

49199.25 quintals respectively or 24,678.44 quintals of clean coffee. From which about 13510.82 quintals (54.7 %) of coffee was sold in the study area during the survey year, while the remaining is used for consumption.

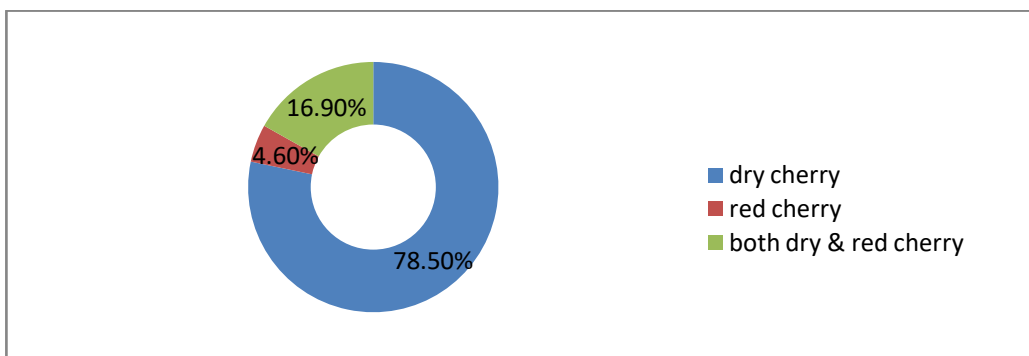


Figure 4: types of coffee sold in study area

Source: Own survey result, 2019

According to the farmers' survey, in 2017/2018 crop season, the estimated volume of sold of red cherry and dry cherry coffee was about 650.60 quintals and 5375.20 quintals respectively. From which about 650.60(100%) quintals of red cherry to be sold at the primary market to primary cooperatives, while 13.7%, 51.1% and 35.2% quintals of dry cherry is sold to collector, suppliers and cooperatives respectively. As indicated in Figure 3, in the case of type of coffee sold by sample respondents replied that 4.6% of them sold their coffee at red cherry, 78.5% of them sold dry cherry and 16.9% of them sold both dry cherry and red cherry coffee.

The conversion ratio as depicted (Minten, 2015) was taken to be 2 kgs of dry cherry builds 1 kg of clean coffee bean, while 6 kg of red cherries have a capacity to make 1kg of clean coffee bean. As shown on table 6 both supply quantities of red cherry and dry cherry is converted to clean coffee to calculate the percentage share of both types of raw coffee sold to traders. Coffee passes through several stages before it reaches the ultimate consumers. Accordingly, the following three main coffee marketing channels were identified in the study area.

Table 7: marketing performance of dry and red cherries in study area

| coffee type | collector | Cooperative | Supplier | sub total |
|------------------------|-------------------|---------------|------------------|-----------------|
| Dry cherry | 736.4 (368.2*) | 1892.1(946*) | 2746.73(1373.4*) | 5375.2(2687.6*) |
| Red cherry | - | 650(108.43**) | - | 650 (108.43*) |
| total of clean coffee | 368.2 | 1054.4 | 1373.4 | 2796.0* |
| Percent (clean coffee) | 13 | 37.8 | 49.2 | 100 |

Source: Own survey result, 2019

NB:*&, ** stand for clean for dry and Red cherry respectively.

Channel I: Producers → local collectors → Supplier → Auction Market (ECX) → exporter

Channel I is marketing channel through which dry cherry coffee pass from coffee producers to coffee collectors and then processed coffee bean is passed from coffee supplier to auction market. It accounted for 13 % (368.2quintals) of total coffee marketed during the survey period. The channel was found to be the least important in terms of drycherrycoffeevolume.

Channel II: Producers → primary cooperative → union → Auction Market (ECX) → oromia coffee union

Following channel I, channel II is also well practiced coffee marketing channel through which both forms coffee (red- cherry and dry cherry coffee) pass from coffee producers to primary cooperative and then the coffee passing ECX for quality inspection finally exported through oromia coffee union. It accounted for 37.8 % (1054.43quintals) of clean coffee marketed during the survey period. The channel was found to be the second important in terms of Dry cherry coffee and the first in terms of Red cherry coffee volume.

Channel III: Producers → Suppliers → Auction Market (ECX) → Exporters:

Among these, channel III is the principal coffee marketing channel through which dry cherry coffee passes from coffee producers to coffee suppliers and then processed coffee bean is passed from coffee wholesalers to auction market. It accounted for 49.2 % (1373.4 quintals) of clean coffee marketed during the survey period. The channel was found to be the first large important in terms of dry cherry coffee volume.

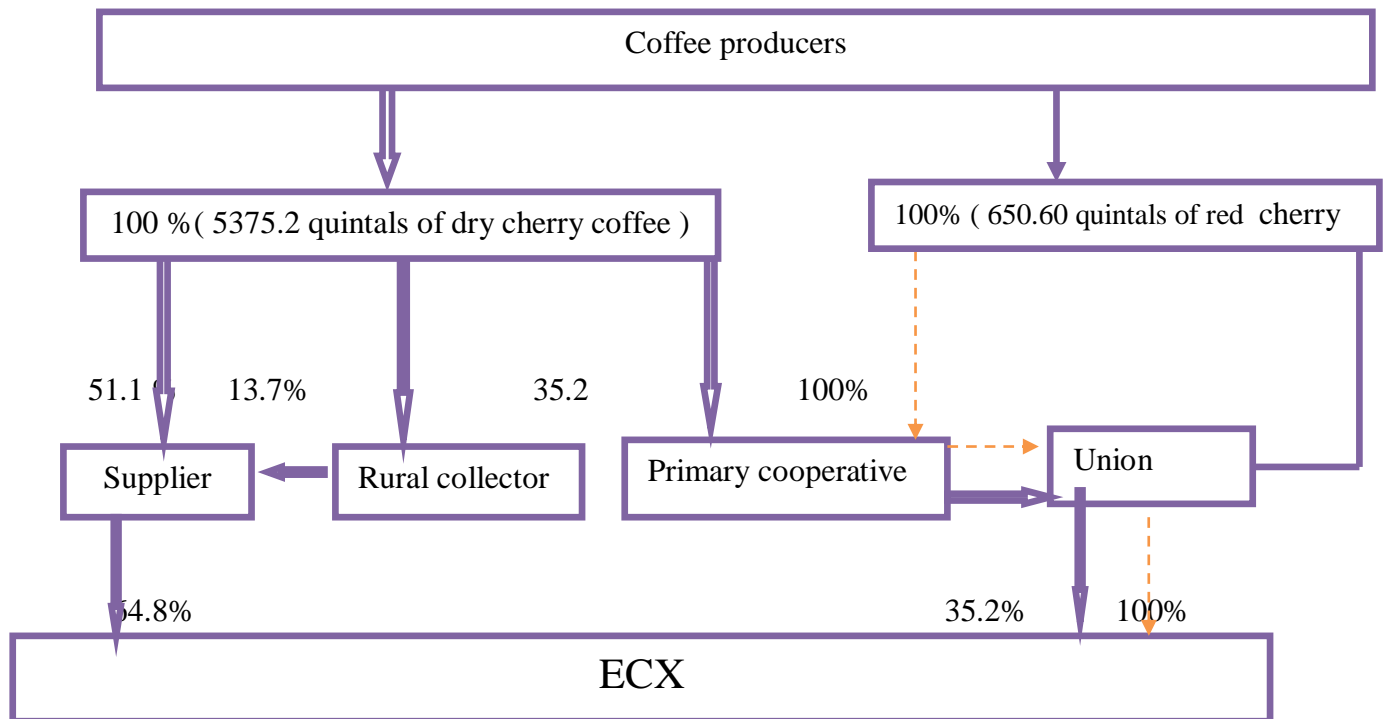


Figure 5: Coffee marketing channel
Source: Own Survey Design, 2019

4.3.2. Marketing margin analysis

The performance of coffee market was evaluated by considering associated costs, returns and marketing margins. The methods employed for this analysis of coffee marketing performance were channel comparison and marketing margin. The analysis of marketing channels was intended to provide a systematic knowledge of the flow of goods and services from its origin of production to final destination.

The analysis of the distribution of costs and gross income at different levels of chain in which actors operate is important in the business of coffee to identify costs, margins and benefit share of each actors in the coffee value chain. The main production cost of coffee are the

variable cost (labor cost for seed bed or seedling hole preparation, sowing seed or planting seedling, fencing, weeding and harvesting), coffee seed/seedling cost, the cost incurred for the purchase of farm implements. Marketing cost of coffee mainly involves the cost of post-harvest activities incurred before coffee reaches the end market. This includes cost of harvesting and packaging (material and labor costs), handling (sorting, cleaning, grading, constitute a large share in the total margin between the final price and the producers' price.

Cost analysis of coffee producers

Operating costs: are all the costs directly associated with growing and harvesting the coffee crop. All costs are expressed as costs per quintal. Money in ETB gained from coffee sales are spent on a particular operating expense. In study area all farmers not use chemical fertilizers for coffee production. The reason farmers lack the interest to use fertilizer is mainly that of the previous information given by the district agricultural experts to not apply fertilizer. This in line with Minten et al. (2015), only range of 1% to 2% of farmers applies mineral fertilizers to produce coffee in the south part of Ethiopia. Coffee production needs costs for land clearing, purchase of seedling/seeds, cost for cultivation and weeding, management of coffee trees (pruning, shearing, planting shadow trees) and other costs related with production. Smallholder farmers' production cost is identified as the major portion of all costs along the marketing chain were taken as a production cost were listed below.

Table 8: Cost incurred for coffee production

| Items | Cost birr/quintal |
|-----------------------------|-------------------|
| land preparation | 48.5 |
| Cost of compost preparation | 44 |
| cost of cultivation | 82.5 |
| weeding cost | 152 |
| Harvesting cost | 155 |
| Total production cost | 482 |

Source: Own survey result, 2019

Marketing costs

In coffee marketing activities, the major marketing costs found to be handling cost (packing and unpacking, loading and unloading), transport cost, product loss, storage costs, processing cost, and capital cost (interest on loan), market fees, commission and unofficial payments. Costs incurred and price received by major actors in the chain are exhaustively identified for both red cherry and dry cherry coffee types separately. Gross margin, associated costs, and profit margins of actors along the chain were also computed together with price and cost components as presented in (table 9 &10).

The major portion of cost for farmer was production (83.2 % and 74.4% of the total cost for red cherry and dry cherry respectively).The remaining 16.8%and 25.6% were processing/marketing costs for both red cherry and dry cherry respectively. The average selling prices per quintal of red cherry and dry cherry were 900 birr and 1911.8 birr respectively. Farmers on average obtained a profit margin of 321 birr/ quintal of red cherry. However, farmers could earn a profit margin of 1266.98birr per quintal of dry cherry 625 birr additional benefit through drying a quintal of red cherry to sell in dry cherry form .This calculated by converting 100kg of red cherry is equal to 50kg of dry cherry form. From this it can be understood that engaging in value addition through drying would benefit farmers more than selling the red cherry form. Primary cooperative have direct connection with farmers in channel II. This means there is no middle men between them. They buy coffee directly from their member farmers and non members and process red cherry. Hence they spend cost for processing and marketing. For primary cooperatives, the processing costs incurred on red cherry coffee type were higher than marketing cost on union for red cherry coffee type. This was mainly due to the reason that major value adding activities on red cherry coffee were done by cooperative.

The marketing costs for union 13.6% were higher than that of cooperative 10.2 % for dry cherry. Comparing these two actors, both gross and profit margins obtained by cooperative were larger than that of union. This high profitability of cooperative than union is because of major value adding activities done and high price by union. All the high profit earned by cooperative however is not retained in the cooperative at all; rather some share of it will be distributed as a dividend to cooperative members proportionately based on the volume of

coffee mobilized. This is what makes the price of coffee earned by member farmers higher than normal price from private traders.

Table 9: Estimated costs and marketing margins of red cherry for actors

| Item(birr/ quintal | Producer | Cooperative | Union | Horizontal Sum |
|-----------------------|----------|-------------|-------|----------------|
| Purchasing price | - | 900 | 1250 | 2150 |
| Production cost | 482 | - | - | 482 |
| Processing | - | 45 | 23 | 68 |
| Material cost | 30.5 | 58 | 20 | 108.5 |
| Loss | 5.5 | 40.5 | 25 | 71 |
| Loading and unloading | 20 | 26 | 10 | 56 |
| Transportation | 30 | 20 | 17 | 67 |
| Marketing cost | 97 | 189.5 | 95 | 381.5 |
| total cost | 579 | 189.5 | 95 | 963.5 |
| total cost % | 60.09 | 19.67 | 20.24 | 100 |
| Selling price | 900 | 1250 | 1432 | 3582 |
| Gross margin | 418 | 350 | 182 | 950 |
| % share of margin | 44.00 | 36.84 | 19.16 | 100 |
| Net margin | 321 | 160.5 | 87 | 568.5 |
| % share of profit | 56.5 | 28.2 | 15.3 | 100.0 |

Source: Own survey result, 2019

Table 10 below depicted both purchasing and marketing costs related to transaction of dry cherry coffee by Farmer, collector, cooperative, Supplier and Union and incurred costs on processing and marketing activities. Supplier buy coffee either from farmers or collectors at primary market or at their store with average price of 2011.8birr per quintal. They are expected to take care of coffee quality and pay higher price for higher quality coffee as compared to collector because they are supplying to exporters through ECX market after grading. They sell at average price of 2950 birr/quintal. The marketing costs for supplier 242.6 birr/quintal for dry cherry (un washed coffee) were higher than for that of collectors. At collectors stage little value addition works being done. The total marketing costs for collectors is 94.9birr/quintal. Relatively higher gross and profit margin were obtained by suppliers than collectors. This high profitability of supplier than collectors is not only the result of cost efficiency rather is relatively higher price at ECX. Suppliers and primary cooperatives add value to coffee, make it uniform, drying, cleaning, bagging in sacks, packing and transporting before they deliver to ECX. Compared to farmers, the marketing expense of the remaining

actor is less than 50% in dry cherry coffee types, but their profit margin was 59 % of the total profit earned by all actors from dry cherry coffee.

Despite farmers do all the work of production and harvesting, and bearing the associated risks, received only 56.5% and 40.9 % of profit shares from red cherry and dry coffee respectively. About 63 .4% of gross marketing margin goes to coffee traders and producers earn about 36.6% of gross marketing margin. In general, traders other than farmers received more than 59 % of the total profit share from coffee business. This uneven share of benefits might be the reflection of power relationship among actors. In fact, the highest profit share taken by cooperative has an advantage for farmers benefiting them it in the form of dividend, social service, capacity building via their respective cooperatives. This in with that of Engida(2017) coffee producers' gross profit was highest when they direct sell to cooperatives while take lowest gross profit when they direct sell to rural collectors. Concluding, for the farmers to get a better profit share, they had better to engage in farm level value additions and/or organize under cooperatives to take the advantage of membership and related services.

Table 10: Estimated costs and marketing margins of dry cherry (un washed coffee) for actors

| item(price/quintal) | Producer | Collector | Supplier | cooperative | union | Horizontal sum |
|---------------------|----------|-----------|----------|-------------|-------|----------------|
| Purchasing price | 0 | 1711.8 | 2011.8 | 2011.8 | 2750 | 8823.6 |
| Production cost | 482 | - | - | - | - | 482 |
| de-husking | | | 49.7 | - | 51.5 | 101.2 |
| sorting/grading | 14 | | 22.5 | 14.8 | 18 | 69.3 |
| drying | 56.7 | | 21 | 14.1 | 17.5 | 109.3 |
| packaging | 5.2 | 18 | 18.5 | 13.5 | 19.5 | 74.7 |
| storage | 1.5 | 3.5 | 5 | 3 | 4 | 17 |
| load/unloading | 1.4 | 8 | 7.5 | 3.5 | 3.5 | 23.9 |
| transport cost | 22.6 | 30 | 18 | 18.5 | 10 | 90.3 |
| loss | 40 | 11.4 | 36 | 23.5 | 20 | 131.7 |
| service cost | 1.92 | 8 | 12.8 | 8 | 6 | 36.72 |
| miscellaneous cost | 19.5 | 16 | 51.62 | 32.6 | 25 | 134.72 |
| Market cost | 162.82 | 94.9 | 242.62 | 131.5 | 175 | 806.84 |
| Total cost | 644.82 | 94.9 | 242.62 | 131.5 | 175 | 1288.84 |
| total cost % | 50 | 7.4 | 18.8 | 10.2 | 13.6 | 100 |
| Selling price | 1911.8 | 2011.8 | 2950 | 2750 | 3250 | 12873.6 |
| Gross margin | 1429.8 | 300 | 938.2 | 738.2 | 500 | 3906.2 |
| % share of margin | 36.6 | 7.7 | 24 | 18.9 | 12.8 | 100 |
| Net margin | 1266.98 | 205.1 | 695.6 | 606.7 | 325 | 3099.38 |
| % share of profit | 40.9 | 6.6 | 22.4 | 19.6 | 10.5 | 100 |

Source: Own survey result, 2019

TGMM and GMM of actors in different market channels of the coffee value chain

Marketing margins of coffee in the three channels for each group of market players are presented here. TGMM, GMM, GMMp, GMMcol, GMMcoop, GMMs and GMMu are total gross marketing margin, gross marketing margin, gross marketing margins of producers, collectors, cooperatives, suppliers and union respectively.

The total gross marketing margin for red cherry 45.8 % and for dry cherry coffee in channels I, II and III were 42%, 38 % and 32 % respectively. The producers' shares for red cherry coffee was 63 % and for dry cherry coffee in channel I, II and III were 58%, 62 % and 68 % respectively. As indicated in Table 11, total gross marketing margin (TGMM) is highest in channel I which was 42%. The main reason for this is the highest consumer price obtained by coffee supplier. Producers share (GMMp) was highest in III which account 68% from the total consumer's price.

This is in line with the Nasir(2016) who indicated that the total gross marketing margin (TGMM) is the highest accounting in a given channel which is shared among collectors, suppliers and exporters.

This difference might support the theory that as the number of marketing agents increases the producers share decreases. The reason being, the higher number of middle men in the commodity market, the more profit they retain for their services whether they add value to the item or not. Correspondingly, Producers gross marketing margin is lowest in the channel I which is accounted 58 % of the consumer price. This is because of the involvement of collectors in the channel which pays relatively low price for coffee producers.

In channel II, the share of producers is about 62 % of the total gross marketing margin taking union price as a common denominator without the addition of members' dividend at the end of the year. In this channel producers gain from vertical integration of the national coffee value chain. Since channel II is above prices of channel I and III on most markets producers earn a larger share than actors in the chain. In channel I, the gross marketing margin for collectors is estimated to be 10.2 %. The gross marketing margin for primary cooperatives is 22.7 %, which is lower than that of the supplier in both channel I and III because their

sellingprice is different. Cooperative get the highest gross marketing margin of up to 22.7%. Hence, channel II and III are preferable for producers while channel I requires intervention either through licensing collectors or totally prohibition from coffee marketing in order to maximize producers share.

The profitability analysis depicted above showed that all coffee market actors are profitable and producers' profit is better than all other traders. However, producers' profit relative to costs that they incurred is not good compared to traders. Traders receive relatively high profit by adding relatively little cost. This implies producers are relatively disadvantaged due to disproportionate share of profit relative to cost. The district office of agricultural and Rural development and ECX reported that currently they developed a law to encourage the direct transaction between coffee growers and private traders in order to improve farmers benefit and coffee quality.

Table 11: Gross marketing margins of each actor in different marketing channels

| Dry cherry coffee | | Channel | | |
|-------------------|-----------------------|---------|--------|--------|
| actors | | I | II | III |
| producer | production cost | 482 | 482 | 482 |
| | marketing cost | 119.6 | 180.2 | 188.7 |
| | Selling price/quintal | 1711.8 | 2011.8 | 2011.8 |
| | GMM p | 58 | 61.9 | 68.2 |
| collector | Purchasing price | 1711.8 | | |
| | marketing cost | 94.9 | | |
| | Selling price/quintal | 2011.8 | | |
| | GMM col | 10.2 | | |
| supplier | Purchasing price | 2011.8 | | 2011.8 |
| | marketing cost | 242.6 | | 242.6 |
| | Selling price/quintal | 2950 | | 2950 |
| | GMMs | 31.8 | | 31.8 |
| coop | Purchasing price | | 2011.8 | |
| | marketing cost | | 131.5 | |
| | Selling price/quintal | | 2750 | |
| | GMM cop | | 22.7 | |
| union | Purchasing price | | 2750 | |
| | marketing cost | | 175 | |
| | Selling price/quintal | | 3250 | |
| | GMM u | | 15.4 | |
| | TGMM | 42 | 38.1 | 31.8 |

Source: Own survey result, 2019

4.4. Econometric Model Result

In the preceding parts of this thesis the descriptive analyses of important independent variables, which are expected to have influence on coffee market supply were presented. In this section, the selected independent variables were analyzed by multiple linear regression models to identify the factors affecting quantity of coffee supplied to the market. Prior to the estimation of the model parameters, it is crucial to look into the problem of multicollinearity or association among the potential candidate variables and presence of heteroscedasticity. Variance inflation factor (VIF) was used to test the degree of multicollinearity among the continuous variables and Contingency Coefficient (CC) test for categorical or dummy variables. The value of VIF for continuous variables was found to be less than 10. That means the VIF 1.86 which is acceptable.

As a result, all 8 continuous independent variables were retained and entered into MLR analysis. For 3 dummy variables contingency coefficient test was worked out to test the existence of multicollinearity effect. As a result, the values of contingency coefficients were less than one which is 0.036 which indicate that there is no serious multicollinearity problem occurred among the dummy independent variables. Since there is heteroscedasticity problem in the data set, the parameter estimates of the coefficients of the independent variables cannot go with the assumptions of Classical Linear Regression (CLR). Therefore, to overcome the problem, it was employed robust standard error method as it can tolerate high variance of the residual.

The variable coffee market supply was used as a continuous dependent variable. Eventually, a set of eight continuous independent variables, three dummy variables were included in the model and used in the MLR analysis. These variables are selected on the basis of theoretical explanations and the result of various empirical studies. To determine the best subset of independent variables that are good predictors of the dependent variable, the MLR were estimated using Stata 14.

4.4.1. Factors affecting coffee market supply

The result from MLR is presented on Table 12. The overall goodness of model fit is high (R²=77.43 %,) indicating that over 77.43 % of the variation in coffee quantity supplied is due to the hypothesized variables. The results of the multiple linear regression model suggest that coffee market supply significantly influenced by farming experience, distance to nearest market, education, member to cooperative and land size affect significantly.

Table 12: Results of the Robust Multiple liner regression

| Variables | Coef. | Robust Std. Err. | P>t |
|-------------|-----------|------------------|-------|
| EDUCATN | 0.872* | 0.501 | 0.084 |
| EXTCON | -1.798 | 1.665 | 0.282 |
| LNDSTZ | 0.786*** | 0.218 | 0.000 |
| FMLSZE | 0.670 | 0.591 | 0.259 |
| CRDUS | -0.074 | 1.439 | 0.959 |
| DNMKT | -0.547*** | 0.202 | 0.007 |
| OWNTRNSPRT | 0.121 | 1.872 | 0.948 |
| MEMBCOP | 0.982** | 0.426 | 0.023 |
| CFRMEXPRNCE | 0.843*** | 0.286 | 0.004 |
| OFRMI | -.00017 | .00026 | 0.504 |
| MAKTINFO | 1.475 | 1.070 | 0.170 |
| _cons | -19.423 | 9.028 | 0.033 |

***, ** and *represent significant at 1%, 5%and 10% probability levels respectively R squared=77.43%

Source: Source: Own survey result, 2019

Educational level of the household head: Educational level of the household head was found to have positive and significant relation with the quantity of coffee supplied to the market. It influences household market supply of coffee at 10% significance level. The model output shows that a one year increase in formal education level leading to an increase in market supply of coffee by 0.87 quintal. The positive and significant relationship indicated that education determines the willingness to accept new ideas and innovations, and easy to get supply, demand and price information which enhances farmers' willingness to produce more and increase volume of sales. Zekarias et al. (2012) studied market chain analysis of forest coffee in south western Ethiopia and found that education level has significant and positive effect on market supply.

Land size:It is one of the variables found to affect coffee marketed surplus significantly and positively at 1% significance level. Holding all other variables constant, for every hectare

increase in land size, the quantity of coffee marketed increase by 0.79 quintal. Land is important factor of production which highly determines agricultural productivity and also as producers employ more land, they produce more and supply more. This result is in line Samuel et al., (2016) found positive and significance relationship between sizes of land allotted for coffee and volume of its market supply.

Distance to the nearest local market: The result obtained from the model output indicates that distance from the nearest market was found to be negative and significant influence on the market supply of coffee at less than 1% significant level. An increase in distance from nearest coffee market by a one kilometer decreases quantity of coffee supplied to the market by 0.54 quintal keeping other factors constant. This implies that an increase in market distance increase producers marketing cost and this in turn reduces market supply of coffee. It is in line with Wendimagegn (2014) reported that market distance affecting volume of coffee market supply negatively.

Cooperatives membership: Membership in primary cooperative affect volume of coffee supplied positively at 5% significance level. As compared to those household who are not a member of coffee cooperatives, those household who are a member of coffee cooperative market supply increase by 0.98 quintal. They were motivated to supply more quantity of coffee with the expectation future benefit from profit dividend than non-members. Farmers in groups have a strong bargaining power when marketing their products and in turn receive better returns for their produce. The result is in line with Bizualem et al. (2015) who indicated that being a member in coffee cooperative increase marketed surplus positively and significantly.

Coffee farming experience: This variable affected quantity of marketed surplus significantly and positively at 1% significance level. The coefficient for this variable implied that, a one year increase in farming experience leads to a 0.84 quintal increase in marketed surplus of coffee, while all other factors affect coffee marketed surplus remain the same. This is probably due to the reason that households with better experience in coffee farming produce more amount of coffee and, as a result, supply more amount of coffee to market. This result was in confirmation with the studies by Bizualem et al. (2015) found an increase in the off-farm income, increase coffee marketed surplus and income obtained from businesses other than farm activities would finance the production and enhanced marketed surplus.

5. SUMMAR, CONCLUSION AND RECOMMENDATIONS

5.1. Summary and Conclusion

This study aims at analyzing the value chain of coffee in Bedele district of BunoBedele Zone in Oromia Region with specific objectives of identifying value chain actor and their function, examining the performance of actors in the chain; analyzing factors that influence volume sold of coffee in the study area.

In order to conduct the study, sample coffee producing households' were selected through multistage sampling methods and using which 150 sample small scale coffee producers, 17 traders as well as two primary cooperatives and one union using a pre-tested semi-structured questionnaire for each group identified. The data, both quantitative and qualitative types, needed for this study were collected from both primary and secondary sources. The primary data were obtained using informal and formal surveys.

The data collected were analyzed using descriptive statistics, value chain analysis and econometric models (MLR) using STATA 14 software and brief discussion was made. Marketed surplus of coffee are found to be important elements in the study of coffee value chain. Therefore, multiple regression models was used in identifying determinants that affect the marketed surplus of coffee as all coffee producers participate in the market.

Out of 150 total households heads interviewed 87.1% were male headed while 12.9% were female headed households. The results revealed that the average year of schooling of respondents was 3.4 years. The survey revealed that the mean land size allocated for coffee was 0.76 hectares. Only 8.6 percent of the sample households took credit for coffee production. This indicates that most of the households were not participating in the credit. The amount of credit ranges from 2,500-3000 birr for a production year. The mean distance that sample households far from the nearest market at the time of the survey was about 16.7 kilometers Extension service provision was expected to have direct influence on the production and marketing behavior of the farmers. The mean extension contact frequency provided for coffee producing farmers was found to be 1.82 day/month. Coffee farming experience is taken to be the number of years that an individual was continuously engaged in

coffee production activity. The mean coffee production experience of respondents was 14.5 years.

The surveyed report also confirms that transportation facilities are one of the basic inputs to undertake production and marketing activities in the study area. Due to this reason about 87.5% of the sampled households had own transportation facilities to transport input from factor market and outputs to product market during the surveyed year. Regarding cooperative membership, 66 % of the sampled households were members of cooperatives and 34 % were not organized under cooperatives. About 87.3% of households indicated that they had information about coffee market and 12.3 % of producers had don't have any idea about price and supply of coffee in the central or ECX market.

In line with the objective of the study, value chain analysis indicated that there are direct and indirect actors who can take their part in each and every stages of the coffee value chain in the study area. The direct actors of coffee value chain are input suppliers, coffee producers, and collectors, coffee supplier, cooperative and union. The indirect actors of coffee value chain in the study area are both governmental and nongovernmental organizations such as research centers, world vision, Office of Agricultural and Rural development, trade and Market development office and Cooperative promotion Agency, Micro-Finance Institution and Banks. In addition to this, major activities performed by the coffee value chain actors include provision of inputs, production, drying, sorting, De-husking grading, processing, transporting and distributing which in further adds form, time and place value of the product.

Qualitative analysis of the value chain analysis identified nature of chain governance and coffee market channels in the study area. With respect to value chain governance, chain coordination role is dominated by private traders and there are three alternative coffee market channels in the study area through which the produce reaches its ultimate consumers.

The distribution of benefits in the value chain was examined by considering costs, returns and marketing margins along the chain. Accordingly, margin analysis for value chain actors indicated that about 36.6% and 40.9 % of market margin and profit margin, respectively, goes to coffee producers followed by suppliers who obtain about 24% of market margin. In general

the study has indicated that about 63.4% of gross marketing margin in coffee value chain goes to coffee traders and producers earn about 36.6 % of gross marketing margin. Marketing margins of coffee in the channels for each group of market players has indicated that total gross marketing margin (TGMM) is highest in the channel I which is 42%.The farmers' gross marketing margin (GMMp) is highest in the channel III which is the 68% of the consumer price.

Results of MLR model revealed that education of the household , member to cooperative, coffee farming experience and Land size affected positively and significantly; whereas distance to nearest market affected marketed supply of coffee negatively and significantly. Therefore all these variables should get considerations to improve or increase volume of coffee supplied to the market.

5.2. Recommendations

On the basis of the results of this study, the following recommendations for policy makers, developments actors and researchers who have strong interest in promoting value chain and expected to be done for the further improvement of coffee value chain in the study area.

1. Due to economic constraints, farmers are unwilling to process the coffee in advanced and standard method. The district market development office and NGO (world vision) should motivate by incentivizing and mobilizing the farmers in order to undertake coffee processing. The role of government officials like district Agricultural and rural development office and associated stakeholders is important to deal with low profits gained by the farmers. Although training is regularly given to the farmers, continuous assistance is needed in order to monitor the whole process of coffee production.
2. The value chain actors must play a critical role to increases the profit work back in the district coffee sector and then will significantly improve living standards of the poor who are at the source of the chain. The actors in the value chain, government, and non-government organizations should divert their efforts toward reducing deteriorating quality and value addition. The stakeholder in the district which includes smallholder producers in coffee value chain and value addition (win-win strategy) must be designed. Furthermore, it would be better if farmers are encouraged to value additions as an alternative for better profit, price, and income generation. Value chain governance and coordination among actors in coffee value

chain in the study area is poor. Therefore, creating marketing network among actors is quite important for value chain coordination, innovation and development.

3. The result of the study shows that education was an important variable positively affecting market supply of coffee. This result confirms that education improves the readiness of the coffee producing households to accept new idea and innovations as well as get updated demand, supply and price information which in turn enhances their willingness to produce more and also supply more to market. Therefore, The District extension agents together with the District Office of cooperative promotion should give emphasis on encouraging farmers to learn adult education and make the environment conducive for small scale producers to expand their understanding through both formal and informal learning. Among informal learning, experience sharing with producers of other area known by high production is more recommendable in addition to providing short and intermediate practical based training.

The district Road Authority and concerned stakeholder should have to be solve the problem of infrastructure since distance to the market is significantly affected the amount of coffee market supply negatively. Thus the far from market should be reduce to the information availability of market and increase transaction cost of the coffee producers, easily exploited by informal traders and rural collectors. Therefore, strengthening and expanding the existing rural roads that connect different rural kebeles with market through encouraging rural road construction worker. Farming experience is also significant variable that affect market supply positively. Therefore district office of Agricultural and rural development building farmers' exposure through trainings and creating a conducive environment to share their experience with other farmers found in the zone and other regions.

Land is the basic input and factor affecting the amount coffee supplied to market. Increasing the production and productivity of coffee per unit area of land is better alternative to increase marketed surplus of coffee from available land size. Agricultural and Rural development office of the district focus how to create awareness for farmers how to utilize their land to overcome their land shortage and continuous assistance is needed in order to monitor the whole process of coffee production

Membership in coffee cooperative is an important determinant of market supply of coffee by the producers in the study area. This is because when producers join together, they are more likely to gain different knowledge through experience sharing and working together. More over working together boosts their bargaining power and encourages them to produce and sale more. Therefore, cooperatives promotion office of the District as well as regional policy makers with respect to cooperative, effort should also be made to strengthen farmers' cooperative and encourage collective action of farmers to lower transaction costs to access inputs and market; and linking farmers to domestic as well as international market through certification depending on the quality of their product which enable them to fetch better price.

- Future researches on factor affecting market supply of coffee along coffee value chain like this study are needed in order to investigate other extraneous variables other than the items used in this study that could contribute for improvements in coffee value chain performance but the findings showed that these items still hold as factors.
- In the future, research should be undertaken upon the significance of government strategy that enforces a firm to participate in one stage of the value chain for quality improvement and value addition.
- Researchers also have to study on the quality of coffee produced and supplied in the district.

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7. APENDEX

Linear regression Number of obs = 150

F(11, 138) = 75.06
 Prob> F = 0.0000
 R-squared = 0.7743
 Root MSE = 7.1678

Appendix 1 The result of multicollinearity tests

| variables | Robust Coef. | Std. Err. | t | P>t | [95% Conf. | Interval] |
|-------------|-----------------|-----------|-------|-------|---------------|-----------|
| CFRMEXPRNCE | .8433847 | .2857058 | 2.95 | 0.004 | .2784577 | 1.408312 |
| FMLSZE | .6697414 | .5913057 | 1.13 | 0.259 | -.4994494 | 1.838932 |
| DNMKT | -.5473401 | .2016129 | -2.71 | 0.007 | -.94599 | -.1486901 |
| EDUCATN | .8724612 | .5012639 | 1.74 | 0.084 | -.1186896 | 1.863612 |
| MAKTINFO | 1.474949 | 1.070133 | 1.38 | 0.170 | -.6410274 | 3.590926 |
| FREXTCON | -1.797615 | 1.66462 | -1.08 | 0.282 | -5.089073 | 1.493843 |
| OFRM | -.0001697 | .0002532 | -0.67 | 0.504 | -.0006704 | .000331 |
| CRDUS | -.0743084 | 1.439287 | -0.05 | 0.959 | -2.920216 | 2.771599 |
| MEMBCOP | .9815052 | .4255566 | 2.31 | 0.023 | .1400506 | 1.82296 |
| OWNTRNSPRT | .1212868 | 1.872397 | 0.06 | 0.948 | -3.581011 | 3.823585 |
| LNDSZE | .7855362 | .2178921 | 3.61 | 0.000 | .3546975 | 1.216375 |
| _cons | -19.42321 | 9.027573 | -2.15 | 0.033 | -37.27346 | -1.572959 |

Appendix 2 Estimates the result

| Variables | Coef. |
|-------------|-----------|
| CFRMEXPRNCE | 0.843*** |
| FMLSZE | 0.670 |
| DNMKT | -0.547*** |
| EDUCATN | 0.872* |
| MAKTINFO | 1.475 |
| FREXTCON | -1.798 |
| OFRM | -.00017 |
| CRDUS | -0.074 |
| MEMBCOP | 0.982** |
| OWNTRNSPRT | 0.121 |
| LNDSZ | 0.786*** |
| _cons | 0.843*** |

legend: * p<.1; ** p<.05; *** p<.01

Appendix 3 Multicollinearity test

| . vif | | |
|-------------|------|----------|
| Variable | VIF | 1/VIF |
| OWNTRNSPRT | 3.88 | 0.257835 |
| LNDSZE | 2.82 | 0.354802 |
| CRDUS | 2.45 | 0.408948 |
| EXTNCONTCT | 2.43 | 0.412102 |
| CFRMEXPRNCE | 1.41 | 0.710674 |
| MEMBCOP | 1.38 | 0.724287 |
| DNMKT | 1.37 | 0.731506 |
| EDUCATN | 1.28 | 0.783798 |
| FMLSZE | 1.21 | 0.824275 |
| MAKTINFO | 1.16 | 0.865456 |
| OFRM | 1.11 | 0.904746 |
| Mean VIF | 1.86 | |

Heteroschedasticity test

hottest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of QNTSOLD

chi2(1) = 2.46

Prob> chi2 = 0.1169

Dummy variables

pwcorr EXTNCONTCT MAKTINFO MEMBCOP

FREXTNCO~T MAKTINFO MEMBCOP

EXTNCONTCT 1.0000

MAKTINFO -0.0467 1.0000

MEMBCOP -0.0175 0.0323 1.0000

Appendix 4 Conversation factor used to calculate adult equivalent.

| Age Category (Years) | Male | Female |
|----------------------|------|--------|
| < 10 Years | 0.60 | 0.60 |
| 10-13 | 0.9 | 0.8 |
| 14-16 | 1 | 0.75 |
| >17 | 1 | 0.75 |

Source: Storck, et al. (1991)

INTERVIEW SCHEDULES

COFFEE VALUE CHAIN ANALYSIS IN BEDELE DISTRICT, BUNO BEDELE ZONE
 , OROMIA REGIONAL STATE ETHIOPIA

Prepared by: FeyisaAsefa

School of Agribusiness and Value Chain Management

Jimma University

Producers' Survey Questionnaires

General instructions for Enumerator

Make brief introduction before starting any question, introduce yourself to the farmers, greet them in local ways, and make clear the objective of the study.

Please fill the interview schedule according to the farmers reply (do not put your own feeling).

Please ask each question clearly and patiently until the farmer gets your points.

Please do not use technical terms and do not forget local units.

Put the answer on the space provided.

General information

District: Bedele

Questionnaire number: _____

Name of Enumerator: _____

Telephone: _____

Date ____/____/2019

Bedele District/ _____ Kebele _____

1. Name of respondent/optional _____

1.1. zone _____

1.2 district _____

1.3 name of the kebeles _____

1.4 distance to nearest market _____ km _____ walking hours

1. Demographic characteristics of the respondents

1. Name of HH _____ Sex _____ Age _____ years.

2. Marital status of household head _____. 1. Single 2. Married 3. Divorced 4. Widows

3. Religion of the household _____ 1. Orthodox, 2. Protestant, 3. Catholic, 4. Muslim

4. Total number of HH members' _____.

5. level of education? 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, diploma or degree

6 family size?

| | <15 | 15-30 | 31-50 | >51 | total |
|--------|-----|-------|-------|-----|-------|
| male | | | | | |
| female | | | | | |
| total | | | | | |

7. how many of your family active for work? -----

Cooperative specific information

8. What is the name of your cooperative? _____

9. When did it established? _____

10. When you join the cooperative _____

11. Is the cooperative you are in licensed? 1. Yes 2. No

12. The distance of cooperative office from your home _____ km or _____ walking hr

13. What service (s) do you receive from the cooperative you belong to? (✓) (Multiple responses are possible)

1. Savings 2. Credit 3. profit/dividend 4. training 5. Marketing information 6. others, specify): _____

Production related information

1. Total land holding suitable for different activities -----h/t (timad)
2. Farming experience of household head: _____ years (timad)
3. Total land allocated for cash crops (like chat, coffee, and like) _____ ht (timad)
4. Land allocated for coffee _____ ht (timad)
5. Total land allocated for coffee production _____ ht (timad)
6. Total land allocated for production of food crops _____ ht (timad)
7. Total land allocated for plantation like (mango, avocado, bahirzafetc) _____ ht (timad)
8. Total land allocated for grazing if any _____ ht (timad)
9. (Note: 1 ha = 8 timad/kert or 1 timad/kert = 0.25 ha)

Crops and livestock produced

1. Food crops produced (if any) 1. Maize 2. Sorghum 3. Wheat 4. Barely 5. Teff 6. Boloke 7. Vegetable 8. If others specify _____
2. Average annual income from crop production _____ birr
3. Average annual income from coffee _____ birr
4. Have you engaged in livestock production? 1. Yes 2. No
5. If your answer is yes for Q4 what are the major livestock you are producing?
1. Cattle 2. Sheep 3. Goat 4. Mule 5. Donkey 6. Horse 7. Poultry
6. If others specify _____
7. Average annual income from livestock production _____ birr

Market related information

1. Did you sell coffee in 2017/18 E.C production season? 1. Yes 2. No
2. Where do you sell your coffee and in which form (also, specify amount of coffee sold and price) _____
3. What is the distance from home to coffee market? _____ in Km _____ in hrs _____
4. Who sets the selling price of coffee? 1. Producer 2. Buyer 3. Negotiated Personal observation 5. Others (specify) _____
5. Are you satisfied with the price setted in the year 2017/18? 1. Yes 2. No
6. Did you know the nearby market price before you transport your coffee to market? 1=Yes 2= No
7. If your answer for above is yes, what is the source of such information?
1. Other producers 2. Media 3. if others specify _____
8. Have you planned for how much to supply to the market in 2017/18 production season? 1. Yes 2. No
9. If your answer for Q*8 is yes, what percent of your total production you planned to supply in 2017/18 production season? _____
10. Have you achieved your plan during the same season 1. yes b. no

11. If you failed to achieve your supply plan what are those factors affected your plan? 1. Market condition 2. Natural condition 3. Political case 4. Personal case 5. Others specify_
12. Did you think the price you are selling is fair? 1. Yes 2. No
13. If your answer for Q*12 is yes what would be your reaction to supply your coffee produce? _____
14. How much produced amount you sell in 2017/18?
15. Quantity consumed (kg) _____
16. Quantity sold (kg) _____
17. Average selling price (Birr/kg in 2017/18) _____
18. Who are the major Coffee market chain actors? 1. Private trader 2. Cooperatives 4. Rural collectors 5. Others (specify _____)
19. To sell your coffee products, which market channel do you use? (Multiple responses are possible) (✓) 1. [] local/private traders 2. [] Cooperatives 4. Rural collectors 5. [] Others (Specify _____)
20. Did you have access to improved coffee variety at planting time? Tick with ✓, _____ yes, _____ no
21. If your answer for question 24 is yes where did you get the improved coffee variety? Tick with ✓, _____ from research, _____ word's/zone agricultural development if other Specify it _____
22. Have you access to support provider? Tick with ✓, _____ yes, _____ no
23. Which support provider have you been supported? Tick with ✓, _____ financial institute, _____ rural development _____ agricultural research centers, _____ and non-governmental _____ organization & _____ other _____ specify it _____
24. Explain the support you have got whether it is in-kind or in cash _____
25. What planting pattern did you use at planting time? Thick with ✓, raw planted _____, scattered planting _____ and other specify it _____
26. On average what is your coffee tree per hectare _____?
27. Do you use input such as fertilizer, herbicide, and other in coffee production? Thick with ✓, _____ yes, _____ no
28. In the case of good agricultural practicing fill the following
29. Frequency of coffee weeding _____
30. Amount of compost used per tree per year _____ kg
31. Have ever been pruned your coffee? Thick with ✓, _____ yes, _____ no
32. Specify _____ density _____ of _____ your _____ coffee _____ shade _____ tree _____
33. Do you have access to support of coffee agronomist /extension agent in your coffee production and processing? Tick with ✓, _____ yes, _____ no
34. If your answer for question 33 is yes, what is the frequency of the expert visit & gives technical advice in a year _____?
35. What was the total quantity of dry cherry coffee did you harvest from your coffee farm area last year/2017/2018 _____ kg?

36. Do you have trend of buying or selling pre harvest coffee flower? Tick with \surd , __yes, __no

37. On average your coffee harvest loss of the year 2017/2018 is _____%

38. What is your coffee productivity in a good year _____quintals/ha & bad year _____kg /ha?

Input and output costs for coffee production and marketing (in 2017/18)

1. Could you indicate how much inputs were used for coffee during the past one year? (only for coffee)

| Fertilizer | | | Pesticides | | | Seeds & planting material | | | Costs for washing / drying / depulping | Transport and fuel costs (Birr) | Cost of certification/on farm audit (Birr) | Other costs (Birr) | Total Cost |
|------------|------|-------|------------|------|-------|---------------------------|------|-------|--|---------------------------------|--|--------------------|------------|
| Amount | Unit | Value | Amount | Unit | Value | Amount | Unit | Value | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

Coffee related income

2. Could you indicate quantity of coffee produced and marketed in 2017/18 cropping year

| Coffee types | Amount produced | Unit | Amount sold | Unit | To whom to sale | Price d/t outlet | Unit | Income earned(in ETB) |
|---------------|-----------------|------|-------------|------|-----------------|------------------|------|-----------------------|
| Sundry cherry | | | | | | | | |
| Wet cherry | | | | | | | | |
| Total | | | | | | | | |

Production process and Cost for coffee in 2017/2018

| No | Activities | Time it take/days | Labor Involved/ man day | Total Labor cost |
|----|------------------|-------------------|-------------------------|------------------|
| 1 | Land preparation | | | |
| 2 | Planting | | | |
| 3 | Weeding | | | |
| 4 | Spraying | | | |
| 5 | Irrigation | | | |
| 6 | Harvesting | | | |
| 7 | Other | | | |

15. How did you process/prepare & market your coffee in 2017/2018? Tick with \surd , _____ cooperatively by bulking, _____ individually, _____ conveying with private investors.

16. Would you rank your income sources from major to minor (use the following code): 1st=_____ 2nd =_____ 3rd =_____ 4th = _____ 5th = _____.

17. Mainly for what purpose did you use income of the 2017/2018 coffee sale specify it as :1 _____ 2 _____ 3 _____ 4 _____

18. If you are member of coffee cooperative, try to put the record of cooperative coffee grade _____ in _____ 2017/2018 in _____ %.
G1 _____ G2 _____ G3 _____ G4 _____ G5 _____ G6 etc.

19. What was your 2017/2018 cost and revenue from other crop, honey, and animal & animal product sale in birr value? Fill the below table.

20. Do you experienced and practice coffee value adding activities pre and post harvesting? Tick with \surd , _____ yes, _____ no

21. So if your answer for the question 20 is yes, what methods of coffee harvesting have you been using? Tick with \surd , _____ selective hand picking, _____ mixed harvesting/stripping, _____ both

22. How have you been drying your coffee? Tick with \surd , _____ on ground, _____ on raised bed,

23. So depending on your answer fill the following blank
selectively harvested and dried on bed in 2017/2018 _____ %
selectively harvested bed dried & prepared to green bean _____ %
mixed harvested & ground dried _____ %

27. The amount of coffee sold at red cherry _____ kg, dried cherry _____ kg & hulled green bean coffee _____ kg

28. Depending on the above value adding activities what was the price did you sell one kilogram of dry cherry /janfel buna/? green bean coffee? & red cherry? _____, _____, _____ ETB in 2017/2018

29. 100 quintals of dry cherry is how much quintals kg of dry cherry coffee _____
Fill the revenue obtained and cost you incurred for value added on coffee and other crops producing and marketing practice of 2017/2018

Table 2. List of cost and revenue/ value added

| S.no | Description | Unit | quantity |
|------|--|--------|----------|
| 1 | Coffee seedlings you planted in 2017/2018 | number | |
| 2 | On average production cost you expended on matured coffee in 2017/2018 | Birr | |
| 3 | Quantity of janfel coffee you harvested in 2017/2018 | Kg | |
| 4 | Amount of coffee further processed to green bean & washed coffee in 2017/2018 | Kg | |
| 5 | Cost you incurred for harvesting, processing & transporting your coffee in 2017/2018 | Birr | |
| 6 | Revenue you got from 2017/2018 Coffee sale | „ | |
| 7 | Amount of dividend you received from your coffee sale in 2017/2018 | „ | |

Credit access and use

1. Have you ever use credit? (1) Yes (0) No
2. If Q1 is yes;
3. How much did you get(borrow) _____ETB
4. From where have gaining credit? (1) Bank (2) OCSC (3) Cooperatives (4) other(specify)
5. How much did you use for coffee production and marketing only? _____ETB
6. For what purpose did you receive the credit in relation to coffee production and marketing? (0) To purchase improved seed (1) to hire labor (2) to purchase materials(both storing and transporting material) (3) to transport coffee (4) to construct storage (5) others specify
7. Do you have any hired labor on your coffee farm? (1) Yes (0) No
8. If yes, How many labors are working on farm? _____
9. What are their compensation or salary given per day _____
10. Access Market information and other services
11. Do you participate in coffee marketing? (1) Yes (0) No
12. If your answer is yes, Who sets your selling price? (in 2017/18)
13. By myself (2) Set by demand and supply (3) Others (specify)

Market information, extension contact, transport information, distance from market

1. Where did you get market information of coffee?
(1) Radio (2) Newspaper (3) Television (4) Extension Agent (DA) (5) Brokers (Intermediate's) (6) through mobile phone (7) ECX (8) Market (9) other specify
Did you get market information at the right time? (1) Yes (0) No
If yes, What type of information did you get?(1) Price information (3) buyer's information(2) Market place information (4) Other (Specify)
At what time interval did you get the information?(1) Daily (3) monthly
(2) Weekly (4) Other (Specify) _____
2. Do you have your own transportation facilities? (1) Yes (0) No
If yes, what type? (1) Vehicle (2) pack animal(Horse, mule donkey) (3) Cart
3. Distance of your residence from the nearest market center: [] km-----hr-----.
4. Did you have extension contact in relation to coffee production and marketing in the year 2017 farming season? (1) Yes (0) No
a) If yes, How frequently you contacted extension agents per month_____?

Off-farm activities and their incomes

1. Did you participate in off-farm activities to generate income?(√)1.[]Yes 2. [] No
2. If your answer for Q1 is yes, what are they?
3. What is the estimated amount of income you obtain from off-farm activities annually?__ Birr.
4. Is your family labor adequate for farm activities? 1. [] Yes 2.[] No
6. If no, total amount of hired labor for the production year 2017/18:_____
7. Challenges and opportunities related with coffee production and marketing_____

Traders interview schedule

- 1.1 Name of Market_____
- 1.2 .Distance from residence to the market_____Km (walking time in minutes)_____

II Socio-demographics

1. Name of trader _____ types of traders _____
2. Age of trader _____ Years
3. Sex of trader **1** Male _____ **2** Female _____
4. Marital status of trader? **1** Single **2** Married **3** Divorced **4** Widows
5. Total family size adult equivalent _____

| | <15 | 15-30 | 31-50 | >51 | total |
|--------|-----|-------|-------|-----|-------|
| male | | | | | |
| female | | | | | |
| total | | | | | |

6. Educational level of trader? Grade completed _____
7. Total number of family members in own business _____
8. Total number of persons employed in your business ? _____
9. What type of business you are involved in?
 1. Supplier to exporter **2**. Coffee collectors **3**. Retailer **4**. Broker/commission agent. **5**. Local collector **6**. Retailer & Broker **7**. Agent of coffee supplier **8**. Other specify _____
10. How did you come to this business? _____
11. Did you have coffee trade license? **1**= Yes **2**= No
12. If your answer for Q*11 is yes, how much did you pay for the trade license? _____
13. How much is the renewal payment? _____ birr
14. For how long have you been in this business? _____ years

III Capital

III. 1 Fixed business capital

III. 2 Financial capital

1. What was the amount of initial working capital when you start this business? -----Birr
2. What was the source of the working capital in 2017/18? **1** own **2** loan **3** gift **4** Share **5** others (specify) _____
3. If it was loan, from whom did you borrow? **1** Relative/family **2** other traders **3** private money lenders **4** micro finance institution **5** NGO **6** Bank **7** Friends **8** other, (specify) -----
4. How much was the rate of interest? _____ Birr for formal and -----birr for informal
5. What was the reason behind the loan? **1** to build store **2** to purchase a car **3** for working capital **4** other (specify) _____
6. How was the repayment schedule? **1** Monthly **2** Semi-annually **3** other (specify) _____

IV. Purchasing and selling activities

Where do you buy coffee and in which form (Also, specify amount of coffee sold and price per)? _____

2. What are prices of coffees during scarce and abundant seasons?

Prices of coffees during scarce seasons?

| Price | Maximum | Minimum |
|----------------|---------|---------|
| Purchase price | | |
| Selling price | | |

Prices of coffees during abundant seasons?

| Price | Maximum | Minimum |
|----------------|---------|---------|
| Purchase price | | |

| | | |
|---------------|--|--|
| Selling price | | |
|---------------|--|--|

1. Where do you sell your coffee and in which form (Also, specify amount of coffee sold and price per kg)?

Marketing costs involved _____

4. Did you process your coffee? **1. Yes** **2. No**
 5. The Coffee Bean Processing Activities and Costs Involved _____

6. after processing 100 quintals of dry/red cherry is how much quintals or kg of clean bean coffee _____

7. How do you attract your suppliers? **1. By giving credit to purchase inputs** **2. By visiting them** **3. By giving better price relative to others** **4. By fair weighing** **5. Other specify**

7. How do you attract your buyers **1. By giving fair price relative to others** **2. by quality of product** **3. by giving bonus** **4. Other specify**

8. Did you use brokers to purchase coffee? **1. Yes** **2. No**

9. If brokers were used, what problems did they create?

1. Cheating quality **2. Wrong price information** **3. Cheating scaling (weighing)** **4. Charged high brokerage** **5. Other (specify) _____**

10. What was the advantage of using brokers? **1. You could get buyers and sellers easily** **2. reduce transaction costs** **3. purchased at lower price** **4. save your time** **5. sell at higher price** **6. other (specify) _____**

11. Did you use commission agents to purchase coffee? **1. Yes** **2. No**

12. If you used commission agent, what problems created by them?

1. Less quantity **2. Cheating on price** **3. Cheating on quality** **4. Cheating scaling (weighing)**

5. Charged high commission **6. Other (specify) _____**

13. What was the advantage of using commission men? **1. to get enough quantity** **2. Purchase at lower** **3. Sell at higher price** **4. Reduce transaction cost.** **5. Save your time** **6. Could get quality coffee** **7. Specify other _____**

14. At which season of the year was preferable to purchase coffee in terms of price?

15. Is your purchasing price higher than your competitors? **1. Yes** **2. No**

If your answer is yes, what was the reason? **1. to attract more suppliers** **2. to buy more quantity** **3. to kick out you competitors from market** **4. to get better quality coffee** **5. other (specify) _____**

16. How do you measure your purchase? **1. By weighing (kg)** **2. by traditional weighing materials** **3. other (specify)**

17. Do you pack your purchase? **1. Yes** **2. No**

18. If yes, what were your packing materials? _____

19. What is the cost of packing? _____ Birr/qt

V. 1 Grading

1. Did you grade your coffee? **1. Yes** **2. No**

2. Did you have the knowledge of national coffee grading? **1. Yes** **2. No**

If Yes, Could you mention it? What are the standard indicators?

V. 2 Transport

1. How far is the purchasing market place from your residence?
(1) District Market _____ kms (3) ECX _____ Kms
2. What is the most frequently used mode of transport to transport coffee from purchasing sites to hulling/washing Centre? _____
1) Head loading 2) Pack animals 3) Animal cart 4) Trucks 5) Others
3. Average cost of transportation you incur to transport coffee from purchase center to hulling or pulping centre? _____ Birr/100kg per km
4. How did you determine transport cost of trucking? _____
Cost per quintal from collection point to store.....Birr/qt per km
From store to the nearest market.....Birr/qt per km
From store to Bedele ECX.....Birr/qt per km
How much was the loading and unloading expenses?

After buying coffees, mention the activities you do as a value addition before you sell it

| Activities | Estimated cost | Remark |
|------------|----------------|--------|
| | | |
| | | |

V. 2 Market system

1. Relationship

| No | Relation b/n you and buyer | | | Relation b/n you and seller | | |
|----|----------------------------|---|--------------------------|-----------------------------|--------------------------|-------------------------------|
| 1 | The same religion | 6 | Regular buyer (customer) | 1 2 | The same ethnic | 6 contractual |
| 2 | The same ethnic | 7 | contractual | 3 | The same origin | 7 Close relative |
| 3 | The same origin | 8 | Close relative | 4 | No relationship | 8 Other, specify |
| 4 | No relationship | 9 | Other, specify | 5 | Meet socially | 9 Regular buyer (customer) |
| 5 | Meet socially | | | 6 | Regular buyer (customer) | |

2. How often do you meet your buyer(s) to discuss business related matters and exchange new information?

| Daily | Once per a week | At least once per a month | At least once every three months | Other (specify) |
|-------|-----------------|---------------------------|----------------------------------|-----------------|
| | | | | |
| | | | | |

3. How do you collect the products?

1. I buy directly from farmer at coffee marketing center 2. I have agent 3. at my store 4. Other specify _____

4. Is there competition between you and other collectors for suppliers here in the same region?

1. Yes 2. no

5. If yes, what measures you take to with stand this competition?

1. Increasing many agents 2. Increasing price 3. Giving loan 4. Other specify _____

6. What kind of services do you provide your suppliers with?

Information about market requirements and developments Equipment and input factors for production loans Technical assistance and training Others, specify

7. What kind of information do you get from your buyer(s)? _____

8. Did you pay tax for the coffee you purchase in 2017/18? **1= Yes 2=No**

9. Did you pay tax for the coffee you sell in 2017/18? **1= Yes 2=No**

10. What was the basis of tax?

1 Per sack-----Birr **3** per basket-----Birr **5** Per kg-----Birr

2 Per quintal-----Birr **4** Fixed payment-----Birr **6** other (specify) _____

11. How long does it take to fulfill the order of a buyer (days between order and delivery)

| | | | | |
|----------|----------|--------|----------------------------|--------------------|
| 1-3 days | 3-5 days | A week | Two weeks (specify why) | More (specify why) |
| | | | | |

12. Can you always fulfill the order (i.e. meet the buyers' requirements in terms of quantity and time)?

1. Yes 2. No

13. Is the supply reliable _____

14. With regard to available business support services (government extension, BDS, Banks, etc.) and the policy and regulatory framework for your sector, what are the opportunities and constraint?

15. What kinds of business services are available? And which ones do you make use of?

16. Are financial resources available? _____

17. What kind of support does the government provide?

18 Are regulatory issues obstacle for your business? **1. Yes 2. No** if yes, what are these regulations? _____

19. What do you suggest for improvement of the coffee business?

20. What did you think as a major challenge in coffee trading and processing?

a) _____

b) _____

c) _____

d) _____

What do think as major opportunities in coffee trading and processing?

a) _____

b) _____

c) _____

D) _____

22. Do you have any suggestions/ comments on?

Cooperative /union

Dear respondents you are required to think and put your genuine answer for the provided questions and thank you for your cooperation.

What are the types of coffee & other crops-cooperatives found in the district? Specify their type and number of member.
 1) _____ 2) _____ 3) _____ 4) _____

When did the coffee cooperatives generally started _____ EC
 In the cooperative the chain actors are primary & secondary actors fill the number of these actors in the following table

Table1. List of primary and secondary actors their number & participation in the cooperative.

| NO. | Name of the cooperative | Function & Number of the primary coffee chain actors held under the cooperative | | | | | | | Secondary actors/supporters | |
|-----|-------------------------|---|------------------------|-----------------|---------------|-----------|--------|------------|-----------------------------|--------------------------|
| | | Coffee supplyin g | Local coffee collector | Coffee processo | whole sellers | Retailers | No = _ | consume rs | Name of the supporter | Type of support they are |
| 1 | | | | | | | | | | |

We would like if you try and tell us sum of total land area covered by coffee all of the farmers in the coffee cooperative holding? _____ ha.

Please fill in the following table cost incurred and revenue gained from coffee value adding activities by the cooperative actors.

Table2. List of value added /cost and revenue.

| Description | Unit | quantity |
|-------------|------|----------|
| | | |

Please would you fill average price of coffee the actors of the cooperative received in 2017/2018

Table3. Price received by the coffee cooperative actors. _____

What is the relationship of Bedele district coffee cooperative and Bunobedele coffee cooperative union? Specify it

Say something about initial capital of the cooperative and the upgrading now/2017/2018 they arrived a) initial capital = _____ birr. b) Now arrived = _____ birr

What do you say about living standard of farmers participating in coffee cooperative union? Tick with ✓, _____ less improved, _____ moderately improved,

Checklist for Key Informants Interview

1. Name of the organization: _____
2. Role of the interviewee in the organization: _____
3. Location and contact information: Region/Zone/Woreda/ Kebele/ P.O.Box/telephone
4. Type of the organization: public/private/NGO/. _____

5. Organizational mission, vision and objectives _____
6. What is the role of your organization in coffee value chain in the study area? _____
7. What are the challenges and opportunities you faced in undertaking those roles assigned to your organization?
8. Linkage /interaction/ partnership/ coordination between actors _____

Checklist for Focus Group Discussion

Participants: Producers of coffee in selected kebele;

1. District: _____ Kebele _____
2. Problems related to inputs suppliers (availability/access, quality, and cost of inputs)?
3. Problems related to coffee production (post-harvest loss, extension service, credit access, market access)?
4. How these problems can be solved? _____
5. How do traders influence farmers participation in coffee value chain?
6. What are the major problems in marketing of coffee?
7. Who is responsible for the above problem?
8. What is the quality trend of coffee improving or deteriorating? Who is responsible for the problem?
9. How these problems can be solved?
10. Linkage /interaction/ partnership/ coordination between coffee value chain actors _____?
11. How all coffee value chain actors benefited from this business equally?
Your opinion _____

Commodity exchange-marketing leader office

Dear respondents you are required to think and put your genuine answer for the provided questions and thank you for your cooperation.

1. In the district fill the number of coffee traders :
 - I. The number of private coffee traders _____
 - II. Cooperative-coffee traders _____
 - III. Local coffee collectors _____
2. According Ethiopia coffee marketing practices, coffee price setting is done between coffee sellers and buyers; however at the beginning of coffee harvest and marketing coffee price is decided by federal & zonal price setting agency. Based on these in this budget year (2017/018) please try to write Average price change of one kg.coffee.
 - I. Price of a kg red cherry in ETB: _____
 - II. Price of a kg dry cherry in ETB _____
 - III. Price of a kg washed parchment coffee in ETB: _____ -
 - IV. Price of a kg red green coffee in ETB: _____
3. From this budget year (2017/018) please would you put the total amount of coffee supplied to local market & export market?

Table1. Total amount of coffee supplied to market from Bedele district in (2017/018)

budget year.

| Type of coffee supplied | unit | Subtotal amount of coffee supplied by | | Total coffee supplied |
|-------------------------|------|---------------------------------------|-------------------|-----------------------|
| | | Private traders | Cooperative union | |
| Red cherry coffee | ton | | | |
| Dry cherry coffee | ton | | | |
| Green bean coffee | ton | | | |
| Washed coffee | ton | | | |

4. For the post-harvest value adding activities how many coffee industries are there?
 - I. The number of dry coffee processing industries _____
 - II. The number of wet coffee processing industries _____
5. Would you list the problems facing in coffee produce supply & marketing?

6. We would like if you list the opportunities that the coffee produce supply & marketing has? _____

Thank you very much for responding to the questions!!!