

Value chain Analysis of Coffee (*coffee Arabica*): the case of Arsi zone, Oromiya National Regional State of Ethiopia

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Abstract

This study aimed at value chains analysis of coffee in selected districts of Arsi zone, Oromia, Ethiopia with specific objectives of identifying the major coffee value chain actors, their roles and functions, identifying the existed coffee marketing channels, analyzing the market performance of actors (benefit distributions) and identifying the constraints and opportunities along the coffee value chain. Descriptive statistics, value chain approaches, market performance analysis were used to analyze the data. The value chain analysis revealed that, input suppliers, producers, primary cooperatives, collectors, wholesalers, exporters and consumers were the main coffee value chain actors. The share of margin in coffee value chain revealed that, producers (51.9%) take the line share followed by exporters (21.26%) and wholesalers (10.31%) while primary cooperative and local collectors are poorly positioned in the coffee value chain in the study area. Constraints like price fluctuation, shortage of market information, higher input cost, limited extension services, long distance to the market, diseases and pests, poor linkage with value chain actors, using inappropriate drying methods and lack of packaging materials are major challenges in coffee value chain in the study area. Thus, Policy aiming at increasing farmers' access to market information, training on pre and post-harvest management developing and

improving infrastructure, facilitating extension services, improving cooperative development and strengthening linkages of actors are recommended to enhance the development of coffee value chain in the study area.

Key words: Coffee (*coffee Arabica*), Value chain analysis, Market margin

1. Introduction

1.1. Background of the study

Coffee is one of the most important commodities in the world economy and the production of this commodity varies across regions and Ethiopia's most important cash crop, with more than 15 million people directly or indirectly depending on it for their livelihoods and is deeply intertwined in the country's social, cultural and historical identity (GAIN, 2014). Coffee is the backbone of the Ethiopian economy and is the leading commodity in generating foreign exchange for the country (Hassan, 2015; Mekonin, 2017). Coffee is the most important crop in the national economy of Ethiopia and the leading export commodity and is well known not only for being the home of Arabica coffee, but also for it is very fine quality coffee acclaimed for its aroma and flavor characteristics (Anwar,2010).

In developing countries in Africa, efforts have made to link production with agribusiness for better growth in the agricultural sector, however the crops value chain including coffee are affected by constraints such as poor infrastructure; low value addition, lack of markets access; poorly functioning input markets; difficulties accessing land, water, and finance; and inadequate skills and technology (World Bank, 2015).

Coffee in Ethiopia, despite its importance, the performance of its sector has remained unsatisfactory and smallholder producers face a number of

challenges in the form of low productivity and quality, lack of access to markets, little opportunities for value addition, lack of capital and access to credit to invest in machineries and to pay for transport to sell outputs (Seneshaw and Bart,2016). In Ethiopia, coffee is mainly produced in Oromiya National Regional State and SNNPR of Ethiopia and these regions shares 2.64% and 1.24% respectively from total of 4% coffee produced in the country (CSA, 2016). Arsi Zone is one of the top ten coffee producing areas in Oromiya region and nearly 70% of the districts (17 districts) of this zone have suitable agro ecology for coffee production. From all grains produced in this zone, coffee ranks 5th and the second most important cash crop next to oilseeds (CSA, 2016) where Gololcha (37.69%), Shenen Kolu (33.35%), Chole (17.92%) Seru (3.81%), Amigna (2.18%), Aseko (1.67%) and Sude (1.06%) districts takes the line share in coffee production of the zone (Arsi Zone Coffee and Tea Authority, 2016).

The quality standards of Ethiopian coffee are classified according to their origin of production. Among the best known coffee varieties in Ethiopia, Harar, Wollega, Limu, Sidama and Yirga cheffee take the priority. The first, Harar coffee is the highest premium coffee in Ethiopia and also in the world. Harar coffee has medium size bean, with a greenish to yellowish color with medium level of acidity and a distinctive mocha flavor (ECXA, 2008) as cited in (Mekonnin, 2017).

For every cup of coffee we drink, there is a story from crop to cup. In a value chain, coffee beans go through different process before they reach the hands of a consumer (Kodigehalli, 2011). As a product moves from the producer to the consumer, a number of transformations and transactions take place along a chain of interrelated activities, and value is added successively at each stage of the chain. The term value chain is used to characterize the set of

interconnected and coordinated links and linkages that take place as a product moves from the primary production unit to the 2 final consumers. Kaplinsky and Morris (2001) define the chain as the full range of activities that are required to bring a product from conception, through the intermediary stages of transformation, delivery to final consumers, and final disposal after use. Different researches conducted around the world have identified the key advantage of value chain analysis. According to Fitter and Kaplinsky (2001) the study of coffee value chain is described as being key to analytical insights. A review on the potential of value chain for rural economic development in Ethiopia by Gashaw (2016) concluded the benefit obtained from value chain development interventions, carefully implemented, weigh up by far than the unintended negative consequences to generalize that no doubt is value chain relevant for rural economic development in Ethiopia.

Even though, Ethiopia is a home for coffee production, there are different constraints along its value chain. According to (Getu,2011), coffee production and quality improvement face challenges in Ethiopia as result of problems created social and natural factors such as: deforestation land degradation, climate change, diseases, crop replacement, weak stakeholder linkages, predominant traditional production failure of using appropriate coffee technologies, little market promotion & incentive mechanism challenges; inadequate services (credit, inputs, equipment'), low price shares & benefit (farmers), increasing costs of production, processing & marketing, lack of sustainability & competitiveness in the coffee sector. As a consequence, the need for improving performance of coffee value chain is not sufficiently addressed in Ethiopia regardless of some efforts from the government to improve and support the sector.

Value chain analysis is a significant concept in strategies to reduce rural poverty in developing countries which offer the farmer the possibility to acquire new knowledge in production and all value chain actors (Humphrey and Schmitz, 2000). However, little attention has been paid to the value chains of commodities by which agricultural products reach final consumers and to the intrinsic potential of such chains to generate value added and employment opportunities (UNIDO, 2009).

The performance of coffee value chain is affected by numerous pertinent issues downstream from supply utilization of inputs, the agricultural practices, and trust between value chain actors, governance, marketing and their interdependency (Girma, 2015). In general, the above mentioned problems in the coffee value chain hinder the potential gains that could have been attained from the existing potential opportunities due to poor linkage of actors, mistrust among actors, lack of cooperation from exporters and suppliers, limited financial services.

Value chain analysis is an interesting and mandatory task to identify the key leverage points for upgrading strategies related with increasing performance and efficiency of smallholder farmers. In this regard, value chain analysis is essential to explain the connection between all the actors in a particular chain of production and distribution as it shows who adds value and where, along the chain and it helps to identify pressure points and make improvements in weaker links where returns are low (Schmitz, 2005).

Coffee value chains are found at the core of high-impact and sustainable initiatives focused on improving productivity, competitiveness, entrepreneurship growth. It focuses the shifted from agricultural production to consumer demand, marketing and the coordination of product flows from producers to consumers. The value chain concept acknowledges that production must be linked to demand and the critical role of organizing the

flow from farmer to consumer opportunities (UNICAF, 2016). Even though several scholars have tried to research on coffee value chain, still various problems need scientific investigation to identify and address through strategic value chain research. However, the existing studies on value chain analysis the case of Arsi Zone were mainly focused on major grain crops other than coffee which shows the study on the coffee value chain is scanty and there is limited studies undertaken before and as a result empirical evidence on coffee value chain which integrates the farmers to the regional and national markets is lacking.

Regarding the information investigated by researchers about Arsi zone coffee subsector, particularly districts like Gololcha the farmers are notable in the country for their agricultural works like coffee farming. Here many producers practice basic subsistence farming techniques and do not plan ahead for improved crops in the future. But there are some farmers organized under basic cooperatives and engaged to practice advanced concepts of using improve production technology for the famous white honey, called coffee. According to (Jima, et .al, 2017, Coffee Consulting 2014) report finding, lack of improved coffee seedlings varieties, disease and pest incidence and khat competition with coffee farming stated as hindrance to fully benefit from coffee value chain opportunities. Despite coffee is economically important commodity of small holder producers in Arsi zone, insufficient regulation of the price of coffee where collectors and suppliers set their own price usually below the market price, hurts the income of coffee farmers and discourages their production and marketing directly and significantly decreases the country's foreign exchange that should have been obtained from the commodity. Coffee supply chain works in an international way, the direct link between producers and exporters are not present. Coffee is traded down a complex line of intermediaries, ranging from local collectors and

primary farmers' cooperatives, who each capture a percentage of the retail value of coffee. Analyzing why these intermediaries capture the enormous share of profits is critical to understand in order to help farmers realize a higher share of retail prices. While it changes hands, coffee undergoes a complex transformation. Thus, examining the performance of actors along the coffee value chain is fundamental to improve their efficiency in the value chain development since value chain analysis has become a key tool for exploring agriculture markets in developing economies as it enables to understand power relationships between various actors in the chain and it has the potential to identify interventions that would benefit the poorest, least powerful actors (Kaplinsky and Morris 2001, Henricksen et al, 2010).

Therefore, in this paper, we analyze coffee value chain with the specific objectives of identifying the major coffee value chain actors, their roles and functions identifying the existed coffee marketing channels, analyzing the market performance of actors (benefit distributions) along the value chain and identifying the constraints and opportunities along the coffee value chain in Arsi zone to design viable upgrading strategies for innervations.

2. Methodology

2.1. Description of the study area

The study was conducted in four potential coffee producer districts of Arsi Zone in Oromia region those selected purposively on the basis of their actual or potential in coffee production.

Gololcha district: is located at about 218 km from Addis Ababa and 206 km from Asella. This district is bordered by aseko , amigna , daro lebu and and chole districts in the north, south east and west respectively. It is found at an altitude ranging from 1400 and 2500 meter above sea level .Major crops produced in the district are coffee, maize, sorghum, teff and groundnut (Jima ,et al., 2017). Coffee plantation enterprise is also found in

the district. Gololcha is the 14th from top 25 coffee producing districts in Ethiopia and 7th from top 18 coffee producing districts in Oromia (James ,et al., 2015).

Chole district: Chole district is located at 219 km to the east of Addis Ababa and 144 km from Asella which is bordered by Guna district in north direction, Aminya and Sude districts in south direction, Gololcha district in east direction and Sude district in west direction. The major crops produced in the district were wheat, barley, maize, faba been, teff, sorghum, coffee and chat (source: Jima *et al.*, 2017).

Seru district: is one of the 26 districts of Arsi zone and found this town has a latitude and longitude of 07°40'n 40°12'e with an elevation of 2302 meters above sea level. It is bordered by Amigna district in the north and northwest, robe district in west and southwest, bale zone in the south and southeast and west Hararghe in the east (<https://en.wikipedia.org/wiki/Seru>).

Aseko is one of the woredas in Arsi zone of oromia region which is bordered on the southwest by chole, on the northwest by merti, on the north by the mirab (west) hararghe zone, and on the east by gololcha. The altitude of this woreda ranges from 1000 to 2900 meters above sea level. Coffee, khat, bananas and flax are important cash crops (<https://en.wikipedia.org/wiki/Aseko>).

The following figure shows map of the study areas in Arsi Zone.

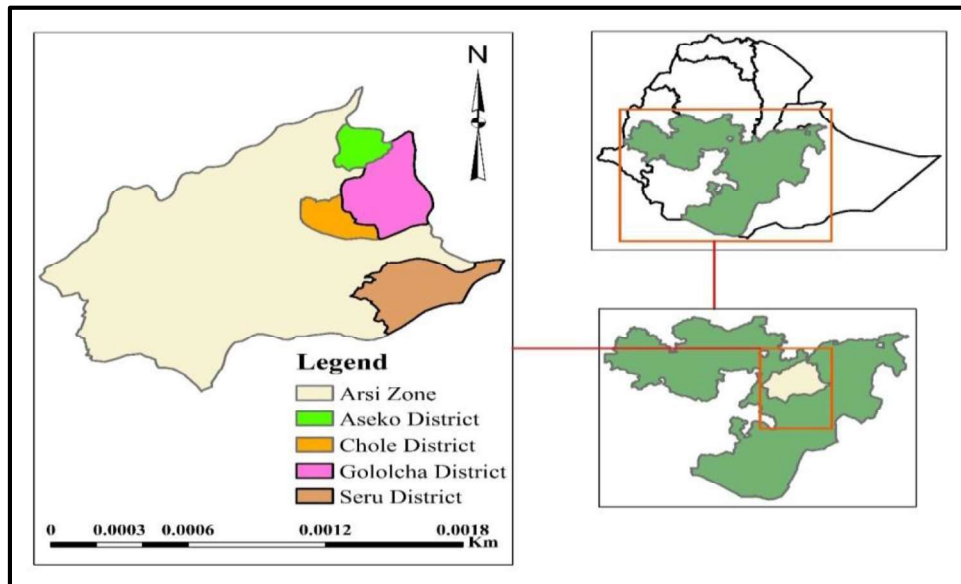


Figure 1: Map of the study area

Source: Own sketch

2.2. Sources of data, type of data and methods data collection

In this study, both quantitative and qualitative data types were used and were collected from both secondary and primary sources. Secondary data were collected from published and unpublished documents, reports, from different governmental offices found in the districts .i.e. from Agricultural and rural development office, CSA, ECX, Trade and Market Development office and zonal offices (Arsi zone Agriculture and rural development office, Coffee and Tea Authority, trade and Market Development office, Road and Transportation office, etc.) whereas the primary data were collected from coffee producers and intermediaries (cooperatives, collectors, wholesalers, processors, exporters and consumers) through household survey methods using tools like questionnaires, group discussion and key informant interview. The household survey was focused on collecting quantitative data

on production and marketing of farm produce, as well as socio economic factors, resource ownership, and farm activities using questionnaire while the qualitative fieldwork was done through focus group discussion and key informant interview methods using the checklist prepared for the study. A semi-structured questionnaire (a combination of both structured and unstructured) was employed to collect primary data for the cropping season of 2017/2018 from the sample respondents of the study area. Before conducting the actual interview, the questionnaire was pre-tested and overseen on few coffee producers (farmers) and traders who were not included in the sample respondents. Pretesting of the questionnaire and interview schedule was carried out by pilot testing & adjustments were made depending on the obtained result. About 15 enumerators who have experience in data collection was recruited and trained on the details of the interviewing techniques and the contents of the questionnaire. The data collection activities were held for four months (from December 1, 2018 to March 30, 2019) with time schedule of the field work at different level of the value chain actors with critical supervision of the researchers.

2.3. Sampling procedure and sample size

To select representative coffee producers from the study areas; three stages sampling techniques were used. Firstly, four districts (Gololcha, Chole, Aseko and Seru) were selected purposively based on their production potential. Secondly, the existed kebeles from selected districts were stratified into two strata based on the volume of coffee production as high, and medium producer from selected districts and '11' kebeles from each stratum were selected using stratified random sampling and Finally, 349 sample coffee producers were selected proportional to the population size from selected kebeles using Yamane (1967) sample size determination formula:

$$n = \frac{N}{1+N(e)^2} \text{ --- Equ. (1).}$$

Where n = sample size, N = number of coffee producers, e = the acceptable sampling error, hence 5% in this study; since the total coffee producers of the selected kebele was 5498, the sample size was 349 using the formula give above.

$$n = \frac{5498}{1+6146(0.05)^2} = 373, . \text{ To reduce the sample size, adjusted sample size method were use as follows; } n = \frac{n_0}{1+\frac{(n_0-1)}{N}}, n = \frac{373}{1+\frac{(373-1)}{5498}} = 349 \text{ --- Equ. 2.,}$$

Table 1: Sample size distributions from selected woredas

No.	Name of selected district	Name of kebeles	Total coffee producers	Proportion of each to total popn.	Sample size from each kebele
1	Aseko	Lencha Oda	378	0.065	23
		Chefa Kuyo	264	0.048	17
		Sub- total	642	0.123	40
2	Chole	Magna lega Buna	554	0.100	35
		Magna Oda Adi	612	0.111	39
		Magna Derartu	602	0.109	38
		Sub-total	1,768	0.316	112
3	Gololcha	Gedo Seka	762	0.139	49
		Mine Gora	795	0.145	51
		Mine Tulu	402	0.073	25

		Haro Akiya	442	0.080	28
		Sub-total	2,401	0.429	153
4	Seru	Waje	308	0.056	20
		Bubulkuche	379	0.069	24
		Sub-total	687	0.131	44
		Total	5498	1.000	349

Source: from each district of 2019

In addition to producers, samples were taken from 28 middlemen's (collectors, wholesalers, and exporters) and cooperatives (both primary and union) based on the response given by the farmers using snow ball sampling method.

2.4. Data Analysis

Descriptive analysis: Descriptive statistics such as actor's performance analysis and SWOT analysis were used to understand the coffee value chain. The coffee value chain actors' functions and characteristics as well as its market channel of the study area were identified and explained. Moreover, the current coffee value chain map of the study area was mapped,. Furthermore, marketing performance (margin and financial profit share) of actors was computed and finally, chains which need upgrading were identified and the intervention needed was suggested. Marketing margin of actors was calculated by taking the difference between coffee producers' price and retail price. This can be calculated mathematically as, the ratio of producers' price to consumers' price as expressed in Equ. 3:

$$\begin{aligned} \text{producers` share} &= \frac{\text{producers` price}}{\text{consumers`price}} \\ &= 1 - \frac{\text{Marketingmargin}}{\text{consumers` price}} \text{-----Equ. (3)} \end{aligned}$$

We also compute gross marketing margin (GMM), Total Gross Marketing Margin (TGMM) and Net Marketing Margin (NMM).

Gross marketing margin is calculated as specified in Equ. 4:

$$GMM = \frac{\text{Retailprice} - \text{farmgateprice}}{\text{Retailprice}} * 100 \text{-----Equ. (4)}$$

Where GMM=Growth marketing Margin

Total gross marketing margin (TGMM) is important to analyze the other margins and is given by the difference between producer’s (farmer’s) price and consumer’s price (price paid by final consumer) and is calculated as given in Equ. 5

$$TGMM = \frac{\text{Consumerprice} - \text{Produceprice}}{\text{Consumerprice}} * 100 \text{-----Equ. (5)}$$

Gross Market Margin of individual actors (jth): - To find the benefit share of each actor the marketing margin was calculated at a given stage “j” and given in Equ.6

$$GMM_j = \frac{SP_j - PP_j}{TGMM_j} \times 100 \text{-----Equ. (6)}$$

Where, SP_j is selling price at jth stage and PP_j is purchase price at jth stage.

Net Marketing Margin (NMM): - is the percentage over the final price earned by the intermediary by deducting the marketing costs and is calculated as follows:

$$NMM = \frac{\text{GrossMarketingmargin} - \text{MarketingCost}}{\text{Consumerprice}} * 100 - -Equ. (7)$$

3. Result and discussion

3.1. Demographic Characteristic of coffee Value Chain Respondents

We used descriptive analysis to summarize the demographic actors, the value chain analysis, and the constraint analysis in this study. Table 1 below summarizes the demographic characteristics of producers and traders in terms of sex, age, family size, experience, marital status and education those which are actors in coffee value chain. The analysis illustrated that, about 94.85% of the sample producers were male headed while the rest 5.15% were female headed households. Regarding sample coffee traders, about 75% of local collectors were male headed household while 25% of them were female headed. Moreover, all of (100%) the traders' samples of wholesalers and exporters were male headed households. These indicate that both males and females are participant in production and trading as well as consumption of coffee.

Table 1: Demographic characteristics of sample coffee value chain actors

Characteristics	Statistical measures	Producers (N=349)	Collectors (N=20)	Wholesalers (N=6)	Exporters (N=2)
Age	Mean	44.15	42.93	44.67	38.67
	Std.Dev	11.36	4.39	6.75	2.52
	Max.	80.00	48.00	56.00	41.00
	Min	24.00	33.00	37.00	36.00

Family size	Mean	7.28	4.20	7.00	4.67		
	Std.Dev	3.41	0.77	1.32	6.00		
	Max.	17.00	6.00	9.00	4.00		
	Min	1.00	3.00	5.00	3.00		
Experience	Mean	14.86	6.47	11.11	2.67		
	Std.Dev	6.09	1.96	3.02	2.08		
	Max.	30.00	9.00	14.00	5.00		
	Min	5.00	4.00	6.00	1.00		
Sex	Male	Frequency	331	15	6	2	
		Percentage	94.85	75.00	100	100	
	Female	Frequency	18	5	-	-	
		Percentage	5.15	25.00	-	-	
	Single	Frequency	7	-	-	-	
		Percentage	2.01	-	-	-	
	Marital	Married	Frequency	333	20	6	2
			Percentage	95.42	100.0	100	100
Widowed		Frequency	7	-	-	-	
		Percentage	2.01	-	-	-	
Divorced		Frequency	2	-	-	-	
		Percentage	0.57	-	-	-	

Education	Literate	Frequency	99	20	6	2
		Percentage	28.37	100.00	100	100
	Illiterate	Frequency	250	-	-	-
		Percentage	71.63	-	-	-

N=Number of respondents; Source: Own computation from survey result, 2018/19

From total of the respondents included in the producers' sample, about 28.37% of them had formal education (can read and write) while the majority (71.63%) had not attend any formal education (cannot read and write). However, the entire sample of coffee traders (local collectors, wholesalers and exporters) had formal education in different grade level. The average age of the sample producers, Local collectors, wholesalers (processors) and Exporters were 44.15, 42.93, 44.67 and 38.67 years with standard deviation of 8.33, 4.39, 6.75 and 2.52 years respectively. Farming experience is taken to be the number of years that an individual was continuously engaged in Coffee production and trading activities. The average years of coffee farming experience of the farmers was found to be 14.86 years with 5 and 30 years of minimum and maximum respectively. The collectors and wholesalers have an average of experience in coffee trading 6.47 and 11.11 years ranging from 9 to 4 and 6 to 14 years respectively while exporters have an average of experience in coffee exporting 2.67 and 15.92 years ranging from 1 to 5 and 9 to 21 years respectively. The average family size of the producers is 7.28 persons and ranges from 1 to 17 persons while the collectors, wholesalers and Exporters have average family size of 4.2, 7.0 and 4.67 persons ranging from 3 to 6, 5 to 9, and 3 to 4, 3 persons respectively.

3.2. Coffee Value Chain Analysis in the study area

3.2.1. Coffee value chain Actors and their roles in the study area

Input Suppliers: In study areas, input dealers for coffee are a government organization such as district agriculture office (DAO) and mechara research center, Oromia Seed enterprise organization and model farmers, primary cooperative and cooperative union supplies to the producers all agricultural input such as fertilizers, chemical and packaging material. Besides, some traders provide some input like the sisal sack and other for some model farmers.

Coffee producers: In the study area, the small-scale producers of coffee regarded as garden production system in the chain of coffee and the majority of them are located in the rural areas where access to the market is very difficult. These are the key actors who are directly involved in coffee production activities and perform most of the value chain functions including planting, Weeding, cultivating, pruning, thinning, pest/disease controlling, harvesting and post-harvest handling (cleaning) , drying, storing, packing and transporting their coffee bean. They engaged in producing and selling their coffee in the form of red and dried cherry. The larger quantities of coffee are sold after storing from two to four months after harvest to local collectors, primary cooperatives, wholesalers, and consumers of the area. Coffee producers in the study districts supply their product either to nearest market (at kebele level) or woreda market using pack animal or traders come to farm gate and buy from them. According to the study, 26.65% and 60.74% of the producers sold their coffee at village market (kebele level) and woreda market respectively whereas the remaining 12.61% sold at both village and woreda market

Table 3: Place of sale for coffee in the study area by coffee producers

Farmer`s response	Type of market	Frequency	Percentage
Where do you sell your coffee after harvest?	Village market	93	26.65
	Woreda market	212	60.74
	Both	44	12.61
Who are the actors involved as a purchaser of your produce?	Actors	Frequency	Percentage
	Local collectors	113	32.4
	Wholesalers	244	69.9
	Primary cooperative	106	30.4
	Cooperative unions	70	20.1

Source: survey result of the study area, 2018/2019 production year

Local collectors (assemblers): Collectors (assemblers) are traders who take contract for wholesalers to purchase from farmers and resale to wholesalers by adding some value to each kilogram of coffee. Collectors are not legally licensed, but they are an actor who purchases coffee from farmers in their locality and remote areas and supply to traders. According to the interview with traders key informant group and districts discussion with agricultural and natural resource experts, collectors were often mix different qualities having various moisture contents, and this would affect the whole stock

because they purchase and sell either in red or dry cherry forms. Their essential role is to bring coffee from very remote areas or village town to the district market. They perform little value addition practices. They have no warehouses of their own and therefore they immediately transfer the coffee to legal traders called wholesalers or suppliers. They are the first actor that links producers to other participating traders. The major market places where coffee assemblers in and around the district undertake transactions are: Chanco, Mine and Haro the case of Gololcha district; Aseko, Irrecha and Lecha Oda the case of Aseko district; Derartu and Lega Buna the case of Chole district; and Waji , Bubukulche, and Seru Abas the case of Seru district. From all actors involved in coffee value chain, local collectors are the most buyers of coffee from producers where about 45.7% of the coffee produced by the farmers is sold to local collectors (table 3).

Primary Farmers` Cooperatives: Primary farmers` cooperatives are the supplier of coffee to the cooperative unions mainly and to wholesalers in small amount in Gololcha woreda which are organized and controlled by district cooperative promotion office. The primary cooperative perform the following functions; the first one is they collect coffee from members of the primary cooperatives; second; they also purchase coffee in village town as a group; third; they supply coffee to cooperative union called Arbagugu union and to wholesalers in Gololcha district. They supply the collected coffee to wholesalers directly without processing in order to reduce the processing cost. However, they are involved in processing or hulling of coffee when they are supplying to cooperative unions .primary cooperative of the district have not any processing machine rather they processed coffee through incurring costs to owners of processing machine at the district level mainly to wholesalers those who have their own processing machine. They are act as

a trader and collect coffee with the same price as collectors and sell with similar price when they sell to both wholesaler and union.

Wholesalers (suppliers or processors): These were those participants of the marketing system who are legally licensed market actors and buy coffee with a larger volume than other actors. Wholesalers in the study area (found Gololcha district) purchase coffee mainly from local collectors/small traders and some part from individual farmers and primary cooperatives within the district of both kebele level market (Haro and Mine) and woreda market (Chancho). According to the survey result, they can collect coffee from only legalized area of the districts by themselves or through their local agents and supply usually to the central market through the ECX auction center to exporters. Wholesales practices the value addition activity including drying, sorting (grading), processing (pulping and hulling), packing by sisal bags and storing in to their own warehouse in small amount in order to earn better price. Wholesalers are found in Gololcha districts those who collect the coffee cherry from both Chole and Gololcha districts. After hulling, for value creation they clear and sort coffee beans by using hired daily labor from defect berries, inert matter and small berries in order to get good quality which get good grades that meet export standard before transporting to ECX and auction center. Finally, the cleared coffee bean ware packed in the sisal sack and transported to the Ethiopia Commodity Exchange warehouse of Dire Dawa deliver center for inspection of quality, grading and bidding which could be sold to exporters (standard export coffee) and wholesalers of higher level those who are engaged in purchasing coffee from ECX that could be re-sold to retailers for domestic consumption. Therefore, in the coffee value chain two types of wholesales ; the first wholesalers are called suppliers those who are collecting coffee from collectors or cooperative or farmers , processing coffee by their won hulling machine and supplying to

the exporters or Wholesalers through ECX. The other wholesales are those who are registered and licensed in purchasing coffee for domestic consumption that comes from suppliers. The second type wholesalers are not have any contact with farmers or collectors ,even suppliers ,since coffee is purchased through participating in bidding that accomplished by Ethiopian commodity exchange. The second type wholesalers could be private or cooperated as a form of cooperative that purchase coffee and sell to domestic retailers that could be sold for domestic consumers in Ethiopia.

Cooperative Union: cooperative union is one of the actors involved in coffee value chain in the study area. Even though there is a cooperative union in Gololcha District they are not participating in coffee trading where Arbagugu union was the major buyers of coffee from primary cooperative and they are also exporter of coffee. They purchase coffee from primary cooperative. They have not their own processing machine rather they pay for owners of the machine and export coffee the same price with that of private exporters. Thus, they add value such as storing, hulling/processing, clearing, and sorting and takes to ECX for quality control and quality inspection and sold to the exporter.

Exporters: Exporters are international traders who purchase standard coffee from wholesalers (coffee suppliers) and sells to foreign countries. They purchase coffee for export and domestic market at ECX trading floor through the auction market from suppliers. According to the ECX marketing system, both coffee buyers and sellers need to register as a member or agent to trade through ECX. After the exporters purchase the coffee through their respective agent in Dire Dawa, they transport it from the ECX warehouse of Dire Dawa to their storehouse. They are often guided by the prices offered by the ECX to make their purchases. Exporters add value to coffee by further reprocessing, sorting, cleaning, and blending different quality coffee to

increase quality, re-graded, and take samples back to Dire Dawa coffee quality inspection center for re-inspecting and certifying for export confirmation. Re-graded and export certified green bean (85%) coffee is packed in sisal bags of 85 kg, labeled with coffee type, grade, date and month of preparation for fulfilling traceability rule and transport to Djibouti by long international truck and then after transfer coffee into containers and ship to imported country mostly Saudi Arabian wholesalers.

Consumers: There are different types of consumers in the coffee chain. They are the one who often gets the coffee from the domestic market and the institutional consumers like different type of the coffee shop, hotel cafe, university and high school that gets it from the retailers and sometimes from wholesalers (exporter). On the other way, coffee exported to the international market was sold to a different coffee shop and supermarket where the consumer gets their coffee and consumer add value through roasting and grinding.

3.2.2 Coffee value chain supporters and their Functions in the study area

Agricultural Natural resource Office (ANRO): This is the government organization who worked under Ministries of agriculture and natural resource offices in closely with the farmers through the district. They prepare the quality seeds and sow them on the nursery site, and when the seedling reaches the transplanting stage, they distribute to the farmers. Besides, they have a development agent worker who is living in each peasant association with farmer and give advice for the farmer every time in his day-to-day activities. Especially during coffee harvesting season, most employers of this office are staying with the farmer in the village in order to control coffee quality. Additionally, they are working on coffee marketing for controlling

illegal collectors whom going to collect coffee from farmers without trade license. They check quality, whether the coffees properly hulled, cleared and sorted as well as they check from adulteration if another coffee type is mixed during processing and packaging for certifying them with a letter of support to transportation.

Mechara Agriculture Research Center (MARC): Mechara Agriculture Research Center is a regional research institute that directly involves in coffee research in West Hararge zone. The center provides support to the farmers through improving agricultural technology, multiplication, distribution of improved technology. The center is working closely with Oromia seed enterprise on improving coffee variety in Gololcha districts. Again the research center distributes for the District agricultural office and the office planting on its nursery and distribute to the farmers.

Oromia Seed Enterprise Organization (OSEO): Previously this organization is known by coffee farm state at the study area but now Oromia seed enterprise purchase the farm from the federal government and owned the organization. They are helping the surround farmers by preparing the improved seed and distributing to them. They are closely works with district agricultural and administration office calling them on the common agenda of developing the capacity of the organization to improve the life of the farmers. This organization is now focusing on multiplication of sorghum seed rather than coffee seed by shifting coffee farm land to sorghum arm land. But, farmers blaming this organization it is not good to degrade coffee farming plant which is contributed to economic and keeping the balance of global warm and it is helpful in working on coffee seed multiplication rather than sorghum.

Exported Coffee Quality Inspection Center (ECQIC): This is another supporter participates in coffee quality controlling system. The main function of the organization is to inspect exported coffee quality for meeting export standard and provide traders with a certificate of exportation. They use inspection standard criteria for checking the quality of the product given to them by exporters by using this criterion all exporters prepare their coffee, and re grade and give samples to the quality inspection center for confirmation.

Woreda Trade office (TO): The woreda trade office has the mandate to all agricultural marketing activities, especially in the licensing business actors.

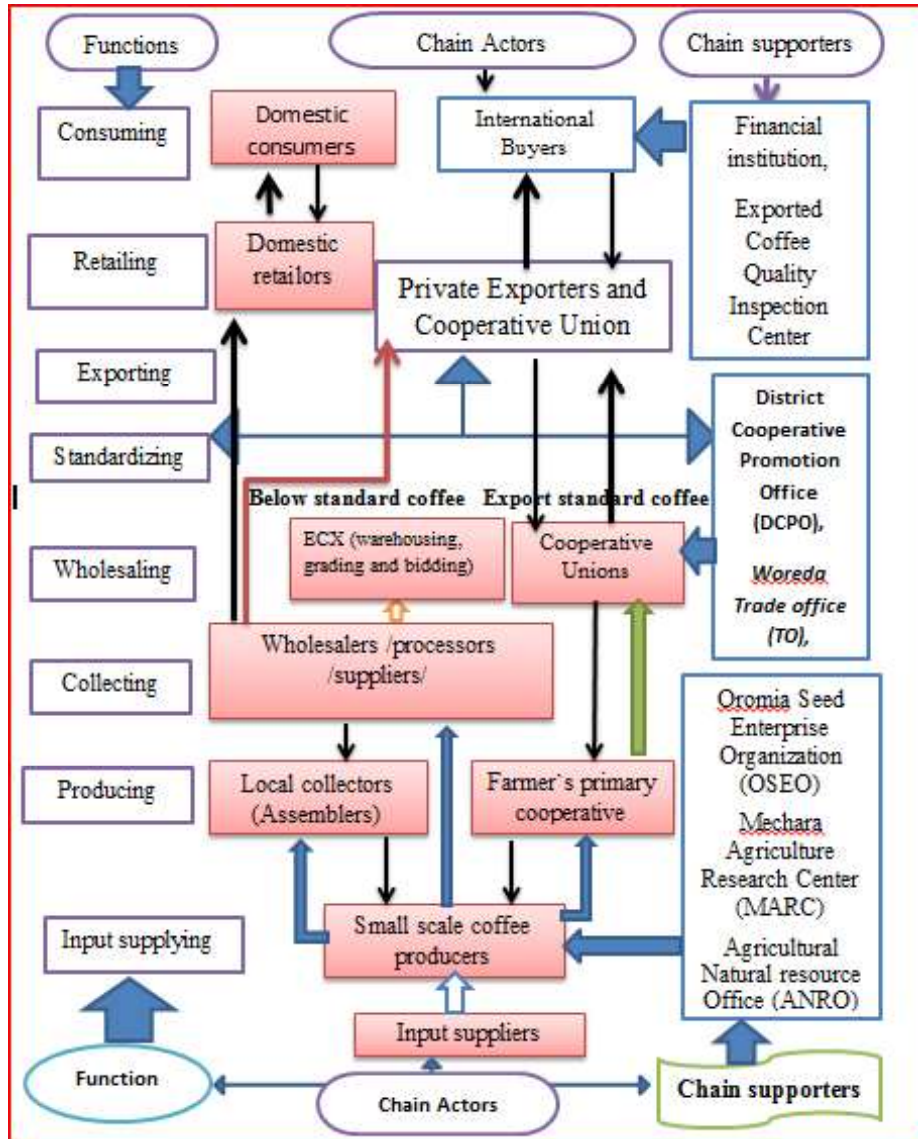
They collect and pass all market information to the stakeholders. The ministry has a direct relation with trader, exporter, ECX and until the international market by collecting necessary information about domestic and international market and pass this information between all actors. Additionally, they have linked with National Bank of Ethiopia in controlling currency rate.

Financial institution: Financial institutions have essential role in supporting coffee value chain. They bring credit to the farmers as to buy seed and other production input. It support the traders and other actors along value chain through providing financial credit and saving as well as other related to financial services.

3.2.3. Coffee Value Chain Map of the Study Area

The actual map of the input-output structure of the coffee value chain of Arsi zone is presented in Figure 2 below and the functions performed by each actor in the value chain are represented on a vertical axis. On the left-hand side of the diagram, the main actors are represented using boxes with solid lines at the middle, while the supporters are represented on the right-hand

side. The downward arrow shows the exchange of money, the double arrow shows the two-way information flow while the upward arrow shows the product movement in the study area.



Source: own sketch

Figure 2: Value chain map for coffee in the study area

3.3. Benefit share or Market Margin distributions of Actors in Coffee Value Chain

Marketing margin of actors was calculated by taking the difference between coffee producers' price and retail price in the study area in 2018/19 production year.

Table 4: Benefit share or Market Margin distributions of Actors in Coffee Value Chain

Costs and sales price (birr/qt)	Producer/ farmer	Local Collector	Primary cooperative	Wholesaler	Exporters (private/Union)	Horizontal Sum
Purchase price	-	6,200.00	6,200.00	7,000.00	8,000.00	27,400.00
Production cost	1,161.85	-	-	-	-	1,161.85
Marketing cost	263.18	120	210	682.35	1,317.65	2,573.18
Total cost	1,425.03	6,220.00	6,460.00	7,682.35	9,317.65	31,105.03
Total cost (%)	4.58%	20.00%	20.77%	24.70%	29.96%	100.00%
Selling price	6,200.00	7,000.00	7,000.00	8,000.00	11,380.00	39,580.00

Market margin	5,038.15	800.00	800	1,000.00	2,062.35	9,700.50
Share of margin	51.94%	8.25%	8.25%	10.31%	21.26%	100.00%
Profit margin	3,613.12	680.00	590	317.65	744.70	5,945.47
Share of profit	60.77%	11.44%	9.92%	5.34%	12.53%	100.00%

Source: survey result from farmers and from key informant interview

Table 4 above shows the market margin analysis that is used to show the distribution of the various actors as coffee move from farmers to different value chain actors and was calculated by subtracting the purchase price from sale price of the commodity in percentage in 2018/19 production and marketing year in average. The relative size of various market participants' gross margins showed where in the marketing chain value is added and/or profits are made (Tegegn, 2013). As it was shown on table 4; costs and sales conducted by coffee producers and coffee traders (local collectors, wholesalers and exporters) were the major actors in the marketing process of coffee procured in Gololcha and Chole districts of Arsi Zone. The price of coffee in these two districts are similar while the farmers sale their produce to different buyers of coffee and thus it is the average cost and price is taken in the table as it was collected from survey data during the time of the study. As it was shown in table 7 above; coffee growers /farmers share the highest marketing margin (51.94%) followed by coffee exporters (either private exporters or unions) (21.26%) and wholesalers (suppliers) of the woreda level (10.31%) of the study area whereas local collectors and primary cooperative share the least market margin form the list in the study area

during marketing year. Regarding share of profit (net profit) of actors in coffee value chain, the same trend was repeated as that of margin distribution in which coffee producers and coffee exporters shared the highest net profit margins with respective value of (60.77%) and (12.53%) respectively followed by local collectors (11.44%) and primary farmers' cooperative (9.92%) while wholesales/ suppliers shared the least value (5.34%) those who are poorly positioned as compared to the actors participated in coffee value chain in the study area of the marketing year. As, we can observe the result, local collectors are more benefited as compared with that of wholesalers. This is due to the fact that, collectors purchase coffee both lower quality and higher quality from the farmers with lower price and sell to wholesalers as higher quality coffee by mixing up these two types. In contrary to this, the wholesalers supply coffee to the exporters which fulfill the standard coffee and incurred higher cost.

3.3.1. Coffee marketing channels of the study area

In order to identify the major types and major buyers of coffee, a question which stated as "for whom did you sell your produce (coffee) in this production year" was asked to the coffee growers during the investigation. Accordingly, the coffee growers in Aseko districts sell their coffee cherry to local collectors (44%) and to consumers (100%) both at village market (Irrecha and Lencha Oda) and woreda market (Aseko) with average selling price of 2955.19Birr whereas as coffee growers in Seru district also have only to buyers of coffee; consumers (83%) and local collectors (47.2%) like that of Aseko woreda both at village and woreda market with average price of 2955.19Birr; implied that an individual farmer has the alternative to sell his produce both for consumers and local collectors simultaneously in Aseko and Seru districts. However, coffee growers in Chole and Gololcha districts

have three alternative buyers of coffee: these include: consumers, collectors and wholesalers both at village and woreda market with varied amount.

Accordingly, 19.1%, 86.5% and 37.08% of the coffee producers in Chole district sold their produce to consumers, local collectors and wholesalers respectively with average selling price of 3038.43Birr whereas 14.8%, 71.9% and 40.1% of the producer in Gololcha woreda sold to their produce consumers, local collectors and wholesalers respectively with average selling price of 3138.65Birr. The percentage implies that one farmer has two alternatives or market outlet and sells his produce both to consumers and collectors the case of Aseko and Seru Districts whereas one producer in Chole and Gololcha districts has three market outlets to sell his produce.

Table 5: Farmers` buyers of coffee in the study area

Name of district	For whom did you sell your produce (coffee) in 2018/19 production year?	Consumers		Local collectors		Wholesalers		Cooperative	
		Freq	Percent	Freq.	Percent	Freq.	Percent	Freq	Percent
Aseko	No	0	0.00	14	56.0	25	100	25	100
	Yes	25	100	11	44.0	0	0.00	0	0.00
Chole	No	72	80.9	12	13.5	56	62.92	89	100
	Yes	17	19.1	77	86.5	33	37.08	0	0.00
Gololcha	No	155	85.2	51	28.1	109	59.9	112	61.5
	Yes	27	14.8	131	71.9	73	40.1	70	38.5

Seru	No	9	17.0	28	52.8	53	100	53	100
	Yes	44	83.0	25	47.2	0	0.00	0	0.00
Total	Yes								
Do you sell your coffee to consumers?						113 (32.4%) =	21.2%		
Do you sell your coffee to collectors?						244 (69.9%) =	45.7%		
Do you sell your coffee to wholesalers?						106 (30.4%) =	19.9%		
Do you sell your coffee to cooperatives?						70 (20.1%) =	13.2%		

Source: own computation from survey result, 2018/19 of the study area

In the current study, marketing of coffee is carried at local market and woreda market. Pricing is decided mainly by wholesalers which are ordered by Ethiopian commodity Exchange (ECX) based on coffee quality. Some times the price of coffee was also decided between traders and farmers based on buyers’ preferences to some extent based on grading through visual estimation of the product. Marketing of coffee include different marketing channels. Wholesalers and exporters mainly dominate in coffee value chain in the study area. From the total volume of produced (2052.12 quintal) by sample respondents in the study area, about 1472.7 quintal of coffee were supplied by the farmers to different buyers of coffee (Figure 3).

From the total amount of coffee produced in the study area, about (21.2%) of coffee was sold to the local consumers while the largest portion (45.7%) was sold to coffee local collectors , (19.9%) was sold to wholesalers and the small portion of coffee (13.2%) was sold to farmers` primary cooperatives from the farmers or coffee growers during the production year at different market place of selected districts where markets like Haro, Mine, Chancho ,

Lega Buna and Derartu were the major market place of the transaction. All portion of the coffee which is bought by local collectors from coffee producers is directly sold to wholesalers which is sold to exporters and domestic wholesalers which is used for domestic consumption in the country after it is checked by ECX. The main buyers of coffee from producers are local collector (45.7% or 673.02qt), wholesalers (19.9% or 293.07qt) and consumers (21.2% or 312.2qt) respectively.

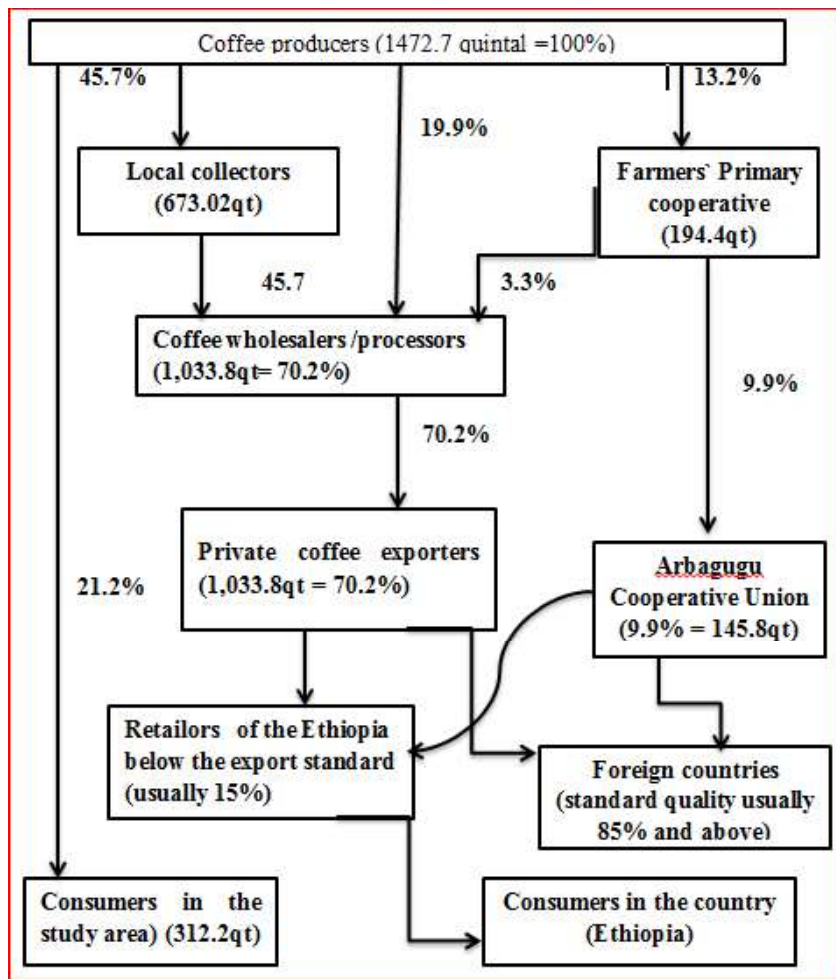


Figure 3: Marketing channels Map for coffee in the study area

The main marketing channels identified from the point of production until the product reaches the final consumer through different intermediaries were depicted in figure 3 below from marketing channel map directed on Figure 3 which is the researchers own computation from the survey result in the study area of 2018/19 production year. These are the following:

Channel 1: Producer → Local Consumer

Channel 2: Producer → Local Collectors → Wholesalers → Exporters
→ International Buyers

Channel 3: Producer → Wholesaler → Exporter → International Buyers

Channel 4: Producer → Primary Cooperative → Wholesaler → Exporter
→ International Buyers

Channel 5: Producer → Primary Cooperative → Union (woreda level)
→ Exporter → International buyers

3.3. Performance of Coffee value chain actors along the marketing channels.

Table 6: Performance of Coffee value chain actors along the marketing channels

Items	Gross and Net Marketing margin of actors along the Coffee marketing channels (%)				
	I	II	III	IV	V
TGMM	0	46.5	44.6	46.5	46.4
GMM _{producers}	100	53.5	55.4	53.5	53.6
GMM _{collectors}	--	7.9	-	-	-
GMM _{coop}		-	-	7.9	7.90

GMM _{wholesaler}	-	8.9	14.9	8.9	-
GMM _{union}	-	-	-	-	8.9
GMM _{exporter}	-	29.7	29.7	29.7	29.7
NMM _{collectors}	-	6.00	-	-	-
NMM _{coop}	-	-	-	5.2	5.2
NMM _{wholesal}		2.8	8.9	8.9	-
NMM _{union}	-	-	-	-	8.9
NMM _{exporter}	-	18.12	18.12	18.12	18.12

Source: computation from survey result, 2018/19

The table 6 above showed that, channel I connects coffee producers directly to local consumers of coffee in which all of the GMM (100%) is goes to coffee producers since producers have not any purchase price and there is no any intermediary between these two actors. In channel II, coffee is purchased from producers and reached to exporters through local collectors and wholesalers (suppliers) in the study area.

This channel is the longest channel where a number of actors participated and about 46.5% of the total gross market margin (TGMM) is goes to coffee traders such as; coffee collectors (7.9%) , wholesalers (8.9%) and exporters (29.7%) in the study area and the largest 55.3% of the GMM is goes to coffee producers. Since there are a number of intermediaries between producers and the end buyer of the commodity, producers are not such benefited along this channel as compared to other channels. In channel III, about 44.6% of the TGMM is goes to coffee traders such as wholesalers (14.9%) and exporters (29.7%) while the rest 55.4% of the GMM is goes to

coffee producers. This result revealed that, establishing market linkage directly with wholesalers is praiseworthy for producers and also for wholesalers. Channel IV connects producers with wholesalers through primary cooperatives in the study area where 46.5% of the TGMM is goes to coffee purchasers such as primary cooperative (7.9%) wholesalers (8.9%) and exporters (29.7%) whereas the rest 53.5% of the GMM is goes to producers. Channel V joins coffee producers with producers through primary cooperative and about 46.4% of the TGMM is goes to primary cooperatives and Unions of the woreda level. Channel V and channel IV are is the second and third most well-intentioned channels for coffee producers next to channel III respectively.

Regarding the Net Marketing Margin (NMM), the highest value of NMM was goes to coffee exporters (18.12%) along all coffee marketing channels during marketing year. Coffee wholesalers or coffee suppliers gained about 2.8%, 8.9% and 8.9% profit (NMM) in channel II, III and IV respectively whereas the NMM or profit of local collectors along channel II was about 6% which is 2.14 times higher than wholesalers` or coffee suppliers` net marketing margin (NMM). This was due to the fact that, collectors purchased coffee with lower price and sell to higher price and incur lower marketing cost as compared to wholesalers or the local collectors purchase both lower quality and higher quality coffee from producers and sell to wholesaler by mixing these two types of coffee together and sell to wholesalers with the same price (higher price). Moreover, primary cooperatives were the gained least NMM (5.2%) and poorly positioned and least benefited during the production year.

3.4. Constraints and opportunities along coffee value chain of the study area

3.4.1. Production constraints of coffee growers

Table 7: Coffee production constraints faced coffee growers in the study area

Constraints	Frequency	Percentage	Rank
Shortage of production land	63	18.05	2 nd
Diseases and pest (CBD,CLR)	116	33.24	1 st
Chemical shortage for disease and pests	28	8.02	6 th
Increase in price of inputs (high input cost)	61	17.48	3 rd
Limited extension services	35	10.03	5 th
Climate change (drought)	46	13.18	4 th
Total	349	100	

Source: survey result, 2018/19 from the study area

Diseases and pests: A larger proportion of the respondents (33.24%) reported that diseases and pests are the severe problem that farmers currently faced in the study area followed by shortage of land scarcity since majority of the farmers are currently shifted to chat production. According to key informant interview with agricultural experts' Coffee berry disease (CBD), coffee leaf rust (CLR) and dieback are the major disease which is highly

reduces the production and moral defect to the farmers in the study area currently. According to key informant interview pruning and better management and decreasing of tree shade can decrease the effect of the disease and insect.

Shortage of production Land: Land scarcity is the second challenge or constraint faced by farmers of coffee producers and 18.05% of the farmers raised there is the problem of land size in the study area. Land is an important factor in producing the high quantity of coffee. According to survey result shown on the table above, farmer holds 0.125 to 2.5 hectare of coffee farm land with an average of 0.51 hectare per farmer. Accordingly, interview with the key informant expert group discussion proper management and use of enough input to their land holding is the only solution to the farmers

Increase in price of inputs and limited access of inputs for coffee production: The most important physical inputs for coffee production are improved seeds, pesticide/herbicides pruning scissors, Sisal jute bags, and mesh wire for drying and irrigation water. About 17.28% of the Farmers replied increased price of inputs are the major problems faced by farmers in the study area where about 8% of them reported that limited access (chemical shortage) and supply of inputs like improved seed as their production problem which are the most limiting factor in quantity of coffee supplied to the market. This is caused mainly due to the shortage of coffee seed multiplying and distributing enterprise.

Limited access to extension services: Although institutional services are present in the study area, the extension contact per year is limited or no such frequent and it is general approach due to unbalanced proportion of development agents and farmers in the study area. In other term, farmers

need agricultural extension service and credit services. The respondents were asked if they faced extension service problems and reported that about 10% of the farmers reported that lack of extension service was the major limiting factor for coffee production in the study area. According to key informant and farmer's interview replied, due to unsuitable agro ecological and no full professional development agent and no active engagement of the financial institution in supporting farmers and there is a shortage of the extension and credit access services.

Climatic change: Climate change resulted to prolonged drought and irregular rainfall is the most affecting variable in the study area. Due to an increasing coming of the global warming there is a change cropping pattern compared to previous decade years. Climate change was the 4th limiting factor for farmers in coffee production in which about 13.18 % of the farmers reported as climate change is the production problem in the study area. Due to an increasing of drought and lack of irrigation availability with an irregular rainfall in the area, they are losing their product highly. According to the interview with key informant group of the district expert, due to an increasing coming of climatic change farmers are migrating to other areas.

3.4.2. Post-harvest related constraints of coffee producers

Table 8: Coffee post-harvest management (practices) in the study area

Questions(Variables)	Alternatives	Freq.	Per (%)
How did you dry your coffee after harvest?	on cemented floor	17	4.87
	on plastic on the floor	176	50.43
	on mish wire bed	16	4.58
	on bare floor simply	140	40.11
Did you store your coffee after harvest?	Yes	310	88.83
	No	39	11.17
How long did you store your dried coffee?	1 -6 months	313	89.68
	More than 7 months	36	10.32
How did you store your coffee?	By filling in sack	218	62.46
	Simply the beans	107	30.66
	Both method	24	6.88
What was your packing material?	Sisal sack	34	9.74
	Plastic sack	296	84.81
	Basket	19	5.44

What was your reason behind storing?	Expecting higher price	283	81.09
	Lack of market demand	40	11.46
	Saving purpose	26	7.45

Source: survey data from the study area in 2018

Coffee harvesting in the study area was conducted highly by collecting red, unripe and dried cherries together once or twice in harvesting months. The reason behind this is that, the selective picking harvesting technique requires a lot of labor thereby increase of cost of production, also whether they harvest by strip or selective the price of the product finally sell to traders are the same thus, since there is no different price for differently handled coffee for quality improvement they were using strip harvesting methods which was save their time.

Coffee drying, packaging and storage: According to the survey result of the investigation, the coffee growers have been using different drying methods to dry their coffee in the study areas. Accordingly, they dry the harvested coffee, on plastics (shera) (50.43%), on bare land (40.11%), on cemented flour (4.87%) and on bed made from mish wire (4.58%) respectively. Apart from harvesting and drying, packaging and storage place are the other most important and essential factor required for maintaining and improving quality of products in marketing functions maintain its commercial value by preserving the integrity of the bean with all its characteristics. The study result showed that, coffee growers were used plastic sacks (84.81%), sisal sack or polypropylene bag (9.74%) and Baskets (5.44%) respectively to pack the harvested coffee. The reason behind using

plastic sacks by most coffee growers is that sisal sack or polypropylene bag is highly scarce, costly and unaffordable by the farmers.

Following drying, and packaging, storage is the most important functions to maintain the coffee quality and to earn higher price of coffee. In the study area, majority of the coffee growers (88.83%) store their coffee after harvest while the rest (11.17%) not participated in storing their coffee indicating that they sold the red cherry immediately after harvest. The harvested and sun dried coffee is stored in the storage house, by filling in the sack (62.46%) , coffee beans in the storage without using sack (30.66%) and (6.88%) of them have used both methods (using sisal sack and only the beans in storing house). Majority of the farmers (89.68%) store their coffee for less than 6 while the smaller portions of the coffee growers (11.32%) store their coffee for more than 7 months which may be the factors for volume of supply in the study area. The main factor that made the farmers to store their coffee for more than half a year includes expecting higher price (81.09%), lack of market demand (11.45%) and for saving purpose (7.45%) respectively.

3.5. Opportunities in coffee value chain

There are many production and marketing opportunities in the study areas identified during survey with key informants, respondents and from observation of the area. High value organic nature of the coffee plant, presence of experienced and interested farmers in production of coffee, presence of governmental attention to coffee production, Presence of Mechara agricultural research center and Oromia Seed Enterprise, the presence of FTC and Kebele agricultural office, primary cooperatives which can supply input and buy products even though they are not involved yet were among the opportunities which can be exploited in production of coffee. In addition to the above, being specialty coffee that fetch premium

price, the newly opened market to an American country an addition to Arabic country is other opportunity.

4. CONCLUSION AND RECOMMENDATION

4.1. Conclusion of the study

This study was aimed at analyzing coffee value chain of coffee in Arsi zone of potential coffee producer districts of the zone as a representative (Gololcha, Chole, Seru and Aseko) in Oromia national regional state of Ethiopia. The major value chain actors of coffee identified includes input supplier, producers, traders, primary cooperatives and union, exporter, wholesaler/retailer/ and consumers. Local collectors are the most important buyers of both sun dried and red cherry from producers, followed by wholesalers those who are bulk suppliers to the private exporters.

Generally, the share of margin in coffee value chain revealed that, producers (51.9%) take the line share followed by exporters (21.26%) and wholesalers (10.31%) while primary cooperative and local collectors are poorly positioned in the coffee value chain in the study area. Moreover, the profit share of actors in coffee value chain showed that, coffee producers and exporters shared the highest net profit margins with respective value of (60.77%) and (12.53%) respectively followed by local collectors (11.44%) and primary farmers' cooperative (9.92%) while wholesales/ suppliers shared the least value (5.34%) those who are poorly positioned as compared to the actors participated in coffee value chain in the study area of the marketing year.

Producers in the study area have four main coffee marketing channels (primary cooperative, local collector, wholesalers and consumers marketing channels). However, the channel which joins producers directly with consumers and wholesalers is the most worthy as compared to the other

channels respectively. The performance of actors along the market channel in coffee marketing indicated that, the Gross Market Margin (GMM) of producers with marketing channel which joins producer to wholesaler is more worthy as compared to the channel along local collectors and primary cooperative indicating that creating a market linkage directly with coffee wholesalers are better. Channel, III, channel V and channel IV are the most well-intentioned channels for coffee producers respectively. The Net Marketing Margin (NMM), the highest value of NMM is goes to coffee exporters (18.12%) along all coffee marketing channels whereas wholesalers in channel II (2.8%) and primary cooperative in channel IV and V (5.2%) benefited with least value during the production year.

Local collectors do not give much attention for the coffee quality rather they give attention to quantity, hence they buy defective coffee with lower price and mix with better quality coffee to get the highest price even sometimes they supply coffee with pebbles in order to increase weight. Therefore this is greatly affected coffee quality as well as market share of actors legally involved in the coffee business. However, some collectors are working illegally in the village town by the name legal traders as an agent. Thus government should have to make down on the ground the legal performance that limit them form an engagement in the market.

Generally different constraints or challenges were faced the farmers which affect the production pattern of coffee. Shortage of chemicals for emergency disease occurrence, high price fluctuation, lack of market information about coffee marketing , high cost of inputs, climatic change , limited access of extension services, distance to the market , diseases and pests (CBD, coffee leaf rust, die back) , shortage of land due to the shift from coffee production to khat production , Poor linkage with value chain actors, price fluctuation,

lack of packaging material like sisal bags, and low market information and low quality resulted in Low price of product, High price of inputs, Lack of capital to purchase inputs, long market distance, Lack of storage materials, diseases and pest attacks, and Limited services of extension are the major constraints of coffee value chain at farmer level recorded in the area.

Constraints like storage problem, color and quality difference of coffee at farmer level, high moisture content of coffee, unripe coffee collected at the farmer level, shortage of coffee Supply, supply shortage, price setting problems with producers, lack of demand ,inadequate market information, lower quality of coffee ,absence of government support ,lack of road access and high competition with unlicensed traders were the major constraints of coffee marketing identified along the value chain of coffee.

Beside constraints there are also opportunity in coffee value chain in the study area which includes availability of government attention to coffee production,, internationally demanding coffee, availability of good agro ecology for production, high demand for dogmatic consumer, being specialty coffee that fetch premium price and the presence of ingenious knowledge are the major opportunity in the study area.

4.2. Recommendation

Based on the findings of the study, the following recommendation would be forwarded and intervened for better value chain development in the study area.

- Facilitating training to smallholders on pre-harvest management like disease/pest control method, improving storage facility, increasing the extension service for the producers and designing process upgrading strategy should be implemented by respective government bodies and other concerned bodies to minimize the constraints at

production stage to create the value chain development for coffee in the study area.

- Facilitating training on post-harvest management of coffee for smallholder coffee growers in the study area since poor harvesting practices, such as stripping and collecting dropped fruits from the ground; improper post-harvest processing and handling practices such as drying on bare ground and improper storage are highly practicing in the study area which reduces quality and increases losses by promoting uneven moisture levels, inducing fungus and ferment, and introducing foreign matter.
- Strengthening functions of farmer's cooperatives, Controlling unlicensed traders; Increasing credibility and market linkages of coffee value chain actors, improving farmers bargaining power by supporting farmer's cooperatives and improving the information dissemination about different marketing aspects of coffee should be done at marketing stage by all responsible bodies to reduce the constants and to create the value chain development of coffee at the study area.
- Improving harvest and postharvest handling will increase the quality of coffee. Since some coffee farmers in the study area still use the traditional method of coffee harvesting, drying on the bare ground, packed with polyethylene bag, and stored in a residential home for a long time, coffee quality is highly affected in the study area. Thus, providing adequate trainings on a continuous basis to producers on pre-and post-harvest management practices are vital. These will further increase the quality; thereby increase the market value of the coffee bean. As a result, increases volume of export coffee and the number share of foreign exchange currency and finally add value to

their crops. Therefore, the university under the thematic area, research center and agriculture should take responsibility of providing sustainable training with careful attention.

- In order to get quality coffee ,coffee producers should harvest only red cherry, improve drying techniques , improve packaging materials (use only sisal sack) and store coffee after it dried well, store at recommend warehouse only for a short period, unless sold immediately after drying.
- Primary market station should operate legally as it is legally priority was given for legal traders should only enter in the market. Government should stop the illegal collector who deteriorates the quality as well as price of the coffee cherry. Every trader should have to buy coffee within the primary market and equally treated in the station.
- Poor harvesting practices, such as stripping and collecting dropped fruits from the ground; improper post-harvest processing and handling practices such as drying on bare ground and improper storage reduces quality and increases losses by promoting uneven moisture levels, inducing fungus and ferment, and introducing foreign matter.

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Appendixes

Appendix Table 1: Cost sheet for coffee suppliers (Wholesalers) in the study area

Description	Unit expense (birr/ quintal)
1. Purchasing cost	
➤ Average purchase price of coffee	7000.00
➤ Loading and unloading cost	23.86
➤ Mean transport cost	29.41
➤ Bags and twins	95.29
➤ Other cost	0.00
2. Processing cost	
➤ Cleaning (pulping and hulling)	10.60
➤ Cleaning and handling labor cost	71.00
➤ Means stock insurance	2.40
➤ Spillage and weight loss (ECX)	105.88
➤ Other cost	-
➤ Taxes	314.12
➤ Labor cost	5.88
➤ Total marketing cost	682.35
➤ Total cost for coffee trading	7682.35
➤ Average Selling price	8000.00

Appendix table 2: Cost sheet for coffee trading within different actors (exporters)

Description	Unit expense (birr/quintal)
3. Purchasing cost	
➤ Average purchase price of coffee	8000.00
➤ Loading and unloading cost	29.41
➤ Mean transport cost	29.41
➤ Bags and twins	100
4. Processing cost	
➤ Cleaning (pulping and hulling)	10.58
➤ Cleaning and handling labor cost	82.35
➤ Means stock insurance	117.65
➤ Spillage and weight loss	176.47
5. Selling (export expenses)	
➤ Export bags and twins	176.47
➤ Transport to the port	105.88
➤ Mean transport insurance	36.47
➤ Weight and quality inspection	29.41
➤ Fee for (Ethiopian standard)	52.94

6. Miscellaneous expenses	
➤ Taxes	323.53
➤ Brokers /agent cost	47.06
➤ Total marketing cost	1317.65
➤ Total cost for coffee trading	9317.65
➤ Average Selling price to foreign countries	4000USD/ton sold with the currency of 28.45birr/1\$(dec,2018) which is equal to 11,380.00ETB

Source: survey result from Gololcha Woreda, 2018/19 (key informant interview: Mr. Sadat Mohammed)

Appendix table 3: Average purchasing and selling price of coffee along marketing channel

Sellers	Buyers	Price (birr/quintal) (Marbush or qishir) (NB. 1kg of coffee bean (un-pulped) =0.5kg of pulped coffee)	Marketing cost
Producers	Local collectors	6100.00	263.18
Producers	Wholesalers (suppliers)	6300.00	263.18
Producer	Primary cooperative	6100.00	263.18
Local collectors	Wholesalers	7000.00	120.00

Primary cooperative	Wholesalers / Unions	7000.00	210.00
Wholesalers	Exporters	8000.00	682.35
Exporter	International buyer (4000\$/ton)	11380.00	1317.65

Source: from different buyers of coffee in the study area

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