Journal of Agriculture and Social Research, Vol. 13, No.2, 2013

QUALITY AND VALUE CHAIN ANALYSES OF ETHIOPIAN COFFEE

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ABSTRACT
The objective of this paper is to analyze the quality and value chain of Ethiopian coffee in a way to identify opportunities that maximize the benefits from the sector. First the Ethiopian coffee sector is overviewed and then analyzed qualitatively and quantitatively starting from the crop up to the cup based on data collected from secondary sources. As a result, in spite of the comparative advantage in flavor, the Ethiopian green coffee price in the international market is lower than other countries' price. In addition, actors are not fairly priced because of quality and value addition. The causes for poor quality are mainly associated with harvesting and post-harvesting practice including collection, dry and wet processing, storage and transportation. The value chain actors will play a critical role to increases the profit plow back in the Ethiopian coffee sector and then will significantly improve living standards of the poor who are at the source of the chain.

Key words – *Coffee, Quality, Value addition*

INTRODUCTION
In today's global market, quality is an order wining criteria. Quality of the end product, a cup of coffee, is determined on every step in the value chain starting from the crop including planting, harvesting, primary and secondary processing, marketing, and storing or transporting (Wintegens, 2004). As a major producer and exporter of coffee, one fourth of Ethiopian population depends on this sector (Dempsey and Ruth, 2008). In this context, a minor improvement in the coffee supply chain would have significant socio-economic importance. This research aimed at analyzing the detail value chain of the coffee industry towards quality improvement. The outcome will help to design and implement interventions by the government and non-government organizations so that the benefits obtained form the sector could be maximized. Value chain analysis looks at every step a business goes through, from raw materials to the eventual end user and the goal is to deliver maximum value for the least total cost (Porter, 1985). As coffee is a commodity which easily deteriorates along the chain, there is no literature that considers quality throughout the chain. Therefore, the research's attempts to identify the key rolls and responsibility of each player in the chain will have a contribution to improve quality and value addition.

Ethiopian economy is basically dependant on agriculture which contributes about 40% of the GDP, and 80% of exports (John and Nebil, 2010). Currently, coffee is the major agricultural export crop, providing 65% of Ethiopia's foreign exchange earnings. In the country, where about large amount of the population is under poverty, coffee cultivation plays a vital role both in the cultural and socio-economic conditions of the nation. According to World Bank report, about 25% of the Ethiopian population depends directly or indirectly, on coffee production, processing and marketing (World Bank, 2009).

In 2008/09, Ethiopia was the fifth largest coffee producer after Brazil, Vietnam, Columbia and Indonesia, the seventh largest exporter worldwide, and the first in Africa (MoARD 2009). Every year, about 265, 000 tons of clean coffee is produced that constitute only less than 5% of the global coffee market (FDRE, 2009). See Figure 1. Despite, this small amount, the majority of the exported coffee is not roasted and decaffeinated (Table 1). Ethiopia exports mainly green coffee

(not roasted and not decaffeinated). Up to 2008, Ethiopia did not export roasted and decaffeinated coffee. In addition, although, Harar coffee is known for its highest price at local auctions, when compared to other coffee origins in Ethiopia, Harar green coffee price at the world market is among the lowest. From 2000-2007, the coffee inspected at the coffee liquoring unit, which comes from the major coffee growing regions (SNNPR, Oromia and Benishangul Gumuz) percentage share of grade 1 and grade 2 coffee is less in both washed and unwashed types. For washed and unwashed coffee, grade 1 accounts 2.26% and 0.39% respectively; Grade 2 accounts for 35.73 and 6.9% for washed and unwashed respectively.

Most of the countries washed coffee falls in grade 2 and 3 but the unwashed coffee which represents 70% of the countries production falls into grade 3 and 4 which commonly supplied for the local market.

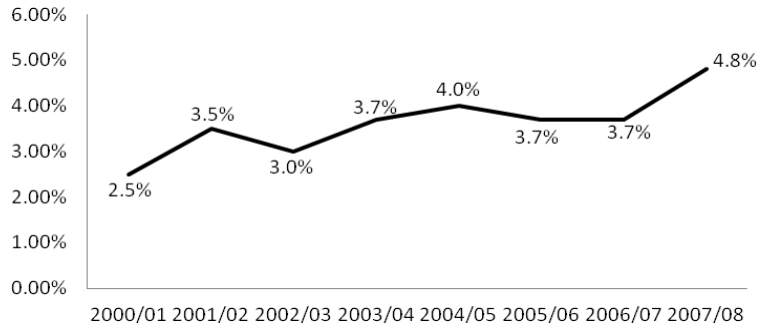

Figure1: The global coffee market share of Ethiopia in the year 2000-2008 **(Source:** ECEA 2009)

Table 1. Ethiopia's coffee export by product type from 2004/08 in Kg

Product Type	**2004**	**2005**	**2006**	**2007**	**2008**
Coffee, not roasted, not decaffeinated	77,665,887	81,438,166	77,964,326	77,077,366	86,767,100
Coffee Ar N/Roasted/Dec	47,999	79,295	116,226	103,630	161,641
Coffee N/Roasted/Dec	19,788	23,571	30,000	33,036	44,959
Coffee, roasted, not decaffeinated	3,091	6,006	39,212	3,215	39,428
Coffee, not roasted, decaffeinated	2,713	1,516	2,908	3,651	2,672
Coffee, roasted, decaffeinated	-	-	-	-	100
Total	77,719,478	81,548,554	78,152,672	77,220,898	87,015,900

Source: *Euro Stats*

It is interesting to note that though the destination countries do not produce coffee, they are major exporters in terms of value. For instance, Germany does not produce coffee, but in terms of value it is number one exporting country in the world. It seems that value addition is the most important in coffee export market. Looking at the export unit value of major coffee exporting countries, the export unit values in Germany, UK, Spain, France, Netherlands, and Switzerland are much higher than those producing coffee.

Quality in the value chain

Coffee quality is of critical importance to the coffee industry. Coffee has value to give the consumer pleasure and satisfaction through flavor, aroma and desirable physiological and psychological effects (Berhan, 1998). Cup quality, often referred to as drinking quality or liquor quality, is an important attribute of coffee and acts as yardstick for price determination (Negussie *et al*., 2008). As a result it determines the benefits to the actors in the value chain.

The end product quality, a cup of coffee, as stated above is an outcome of the pre-harvesting, harvesting and post-harvesting efforts. Because of the coffee's genetic makeup, climatic condition and organic nature Ethiopian coffee is preferred in the global market. However, the supply of Ethiopia coffee (both wet-processed and sun-dried) to local and international market faces some basic quality problems. This quality problem makes the Ethiopian coffee unable to adequately compete in the international coffee market and earn reasonable price. Harvesting and post-harvesting practice are attributed to the decline of the coffee quality and the price as a result.

Harvesting

In many parts of the country, sometimes collectors pick unripe and over ripped coffees together, which results low quality product. This seems to be the general problem in all coffee producing regions in Ethiopia. At all events, growers think that if they harvest earlier, they will cash in earlier on the crops. In addition, they avoid the need for a second run and simplify the whole operation. This is called strip picking and is a miscalculation since apart from the fact that some crop weight is lost, the quality is seriously affected.

Post-harvesting

After collecting either it follows dry or wet processing. In the dry processing the farmers uses Sun drying which takes at least three to five weeks to dry depending on the thickness of the layer of cherries. Most of the farmers use ground floor for coffee drying which is a poor practice that affects the quality seriously. Drying process has very serious impact particularly in rainy regions like Jimma, Kaffa and Gambella where the humidity of the atmosphere is too high or where it rains frequently during harvesting.

Wet processing is applicable for red cherries only. It starts as soon as the farmers begin picking of red cherries. Wet processing goes through pulping, fermentation, washing, soaking, drying and cleaning. The main quality problems under pulping is beans discharged with the skins broken and lost, nipped and hulled of their parchment cover; during fermentation beans color will be brown; during washing the inclusion of coffee seeds floated on the water surface; and during drying ground smell, inclusion of impurities and the moisture content are possible defects.

Coffee storage and handling is one of the crucial processes influencing the coffee quality. The dried coffee is stored in an environment where it can pick up or lose moisture and undesirable smell. In general, the storage facilities are not appropriately designed in a way to be clean, cool, shaded, leak proof, dry, avoid moisture, re- absorption and store away from walls, and well ventilated. Given the small scale coffee production in Ethiopia, it is difficult to build such storage facilities by individual farmers. During the transportation of coffee from the farmers, primary processers, regional stores, Addis Ababa auction store and to the international market quality deteriorates. Bags and containers that hold the coffee are the causes for poor quality.

Value chain mapping

In Ethiopian coffee value chain, the participants are numerous which include smallholder coffee farmers or state farms, primary collectors, suppliers, processors, service cooperatives, unions, exporters and various governmental institutions. Practically, collectors sell to suppliers, suppliers

deliver to the auction (they are not permitted to export), and the auction tender to the exporters. Normally, all Ethiopian coffee should pass through auction center. According to the rule of Ethiopian Commodity Exchange (ECX), a firm should not participate on two or more stages of the value chain. These generic functions are mapped in seven groups as input supply, production, primary marketing, primary processing, trading, green coffee exporting and secondary processing. The main activities and value addition in the value chain are listed in the Figure 2.

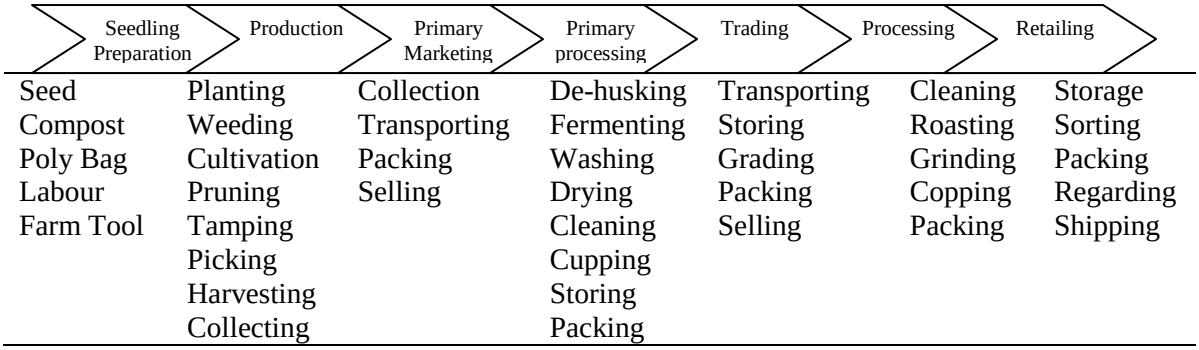

Figure 2: Mapping of coffee generic functions in Ethiopia

Marketing of coffee starts on the farms by producers/farmers. Farmers are the main actors in the coffee value chain. They are involved in transporting of their product to the purchaser's site or give information to collectors. The starting price for the red cherries is first announced by the washing stations owned by cooperatives or private individuals. Local collectors buy red cherries and send immediately to washing stations. Since cooperatives are the owners of washing plants/station, they determine the starting price for a kilogram of fresh red cherries and are followed by private washing stations. During the 2009/10 coffee season, they set a price that ranged between 8 and 12 Birr/kg, to which private processors added up to 10 Birr/kg. The income is mostly spent on food items for household consumption. They sell on average 3 to 10 kg of coffee daily to local collectors in the village. The value addition and operational benefits in each stage of the value chain are determined to identify possible intervention areas. This analysis is conducted only by considering dry coffee export value chain from the area of coffee origin Keffa and Jimma.

The sum of value addition made through out the chain is:

$\Sigma VA = NVAP + NVAPM + NVAT + NVAE + NVAPE$

Where NVAP = Net value added in production

NVAPM = Net value added in primary marketing

NVAT = Net value added in trading

NVAE = Net value added in export

NVAPE = Net value added in processing and export

The sum of operational benefits is:

$\Sigma OB = OBP + OBPM + OBT + OBE + OBPE$

Where OBP = Operational benefit in production

OBPM = Operational benefit in primary marketing

OBT = Operational benefit in trading

OBE = Operational benefit in export

OBPE = Operational benefit in processing & export

Percentage of value added/operational benefit in the particular stage is the ratio of vale added/operational benefit in a particular stage to the sum of value addition/operational benefit made throughout the chain (for example in production the percentage in value addition is equal to NVAP/ ΣVA and the percentage of operational benefit in production is equal to OBP/ ΣOB). To calculate the value addition and expected benefits across the value chain the following assumptions are taken in to account. These are: 1 sac unwashed coffee is equal to 85 kg, Transportation cost from Jima ECX warehouse to Addis Ababa 49 Birr/quintal, Transportation cost from the factory to Djibouti Port 70 Birr/quintal, Cost of Labor & Machinery 31 Birr/Quintal, 1kg of roasted coffee = 1.25 kg of raw coffee. Based on the above formula and assumptions the value addition and operational benefits associated with it is shown in Figure 3. The analysis clearly shows that more than 80% of the benefits obtained form the coffee value chain goes to the secondary processer.

	Seedling Preparation	Farmers	Primary Marketing	Trader	Exporter	Secondary processers
Sales price/quintal	1000	1994	2494	7480.4	50,800
Cost of input	50	1000	1994	2494	9350.5
Material cost	30	50	0	50	2400
Net value added	920	944	500	4936.4	39049.5
Percentage of VA	**1.98**	**2.04**	**1.08**	**10.65**	**84.25**
Operational Cost	450	100	100	250	6,572
Total cost	530	1150	2094	2794	18,322.50
Operational benefit	470	844	400	4686.4	32477.5
Percentage of OB	**1.21**	**2.17**	**1.03**	**12.05**	**83.54**

Figure 3.Value and operational benefits for dry raw coffee export (in ETB)

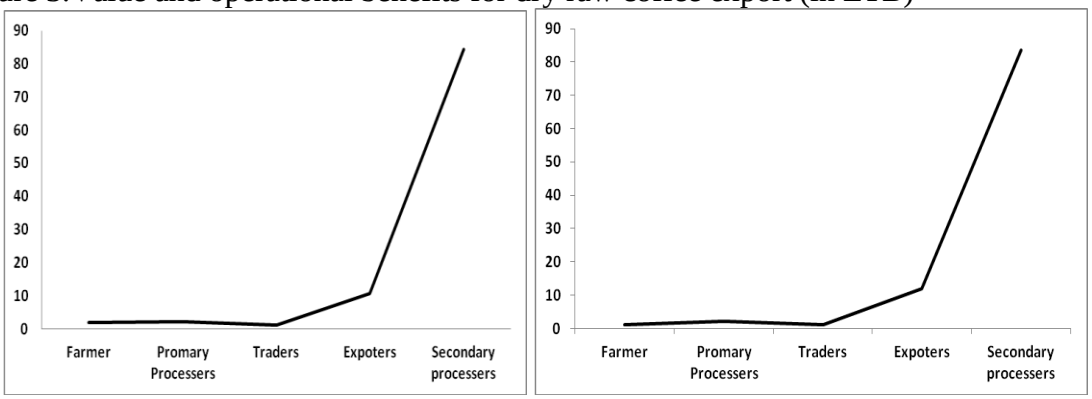

Figure 4. Comparison of percentage value added and operational benefits

From the above value chain analysis, it can be concluded that the actors at the national level: farmers, traders and primary processors share little profits which is less than 20%, while the secondary processors receive the highest share. In fact, the analysis clearly revealed that (Figure 4) the value addition and the benefit obtained is proportional at every stage. Therefore, in order to increase the share of the poor farmers as well as the countries share, the actors in the value chain (the primary processers, traders and exporters) should jump into secondary processing.

CONCLUSION

Ethiopia has a good potential to catch-up the high value coffee market in the world since buyers increasingly appreciate it as high quality coffee. However, Ethiopia is not benefited from this product because of two reasons: quality deteriorates along the value chain and the value addition is almost negligible. Practically, the majority of coffee is exported in the form of green beans to be roasted outside Ethiopia. Due to this reason, the profit plow back to Ethiopian poor farmers from the end users is less than 10%. It is this small amount that covers about 65% of the nations export. Therefore, the actors in the value chain, government, and non-government organizations should divert their efforts toward reducing deteriorating and value addition. 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.

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