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Value Chain Analysis of Coffee in Gedeo Zone, Ethiopia, with Focus on Farmers' Cooperatives

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Abstract

Yirgacheffe coffee is among the high value coffee varieties grown in Southern Ethiopia, a region known for its quality coffee. The study was conducted to analyse coffee value chain in the Gedeo zone Yirgacheffe Coffee Farmers Cooperatives Union (YCFCU). Primary data was collected from 121 sampled coffee producers. Descriptive statistics and correlation analysis methods were employed to analyse the data. The results of descriptive analysis showed that relationship, actor roles, access to market, government policy, financial, competition, and human and physical resources are some of the problems in the coffee value chain. The result from correlation analysis indicated that actors' roles, marketing relations, competition, government, and market issue significantly affect performance of coffee value chain. The relative importance of marketing relations is higher than other independent variables. The implication is that actors should take an active role in managing all aspects of their performance of value chain analysis of coffee in the study area.

Keywords: Coffee, Value Chain, Cooperative Union, Ethiopia

Introduction and Problem Statement

The international market contributes a lot to exchanging different goods and services. Globally, coffee is the second-most traded commodity in volume of trade, after petroleum, and produced in over 50 developing countries. World coffee production for 2019/20 is forecast at 5.4 million bags (60 kilogrammes), which is lower than the previous year, at 169.1 million, due primarily to Brazil's Arabica trees entering the year of the biennial production cycle. Global consumption forecast is at a record 167.9 million bags (USDA, 2019). Ethiopia is the birthplace of coffee and stands first in coffee production in Africa. It is the fifth-largest coffee producer in the world. Coffee shared 5.28% of the area under all crops in the country and 4,945,743.63 quintals of produce was obtained from this crop (CSA, 2018/19). All coffee production in the country is rain fed; thus, precipitation is the most important production factor (GAIN, 2019). Small land holder farmers produce 95% of Ethiopia's coffee in varied environments, including forests, semi-forest land, gardens, and plantations. The country is the main storehouse of genetically diverse Arabica coffee, including the well-known coffees of Sidamo, Yirgacheffe, Harar, Nekemte, and Limu. There are, however, numerous lesser-known coffee regions that have equally distinct flavour profiles. The range of flavour profiles adds a unique element to Ethiopian coffee, and makes it especially well-suited to development within the specialty coffee market (ECFF, 2017). The main coffee-growing areas are found within the Oromia Region and Southern Nations, Nationalities, and Peoples' Region (SNNPR), with modest production in Amhara Region and minor output in Benishangul-Gumuz Region (ECFF, 2017). The importance of coffee as a highly significant crop in Southern regions is because it is one of the most valued primary products in country trade. Most coffee-producing areas fetch premium prices in the world market. The Gedeo zone has highly conducive agro ecology and potential land to produce coffee. Nowadays, average productivity of coffee in the area is 9.4 Qu/ha (Gedeo Zone Agriculture and Natural Resources Department, 2018/19), which is below the national average (Anteneh T, 2011).

Different scholars conducted a study on coffee value chain in Ethiopia. Birhanu et al. (2013) found that the price of Ethiopian green coffee in the international market is lower than the price in other countries. In addition, the actors are not fairly priced because of quality and value addition.

Tadese (2015) observed that improvements in the quality of coffee export, and expansion in domestic production of coffee and the road sector are believed to provide significant effects on export supply of coffee. Duguma (2017) stated factors which were responsible for quality deterioration, which include variety, environmental conditions, agronomical practices, diseases and pest, post-harvest factors and poor marketing infrastructure, crop replacement, and adulteration of high quality coffee. The role of agronomic practices of coffee, the role of government policy and regulation, and the role of financial institutions are among the determinant factors of coffee value chain in Ethiopia that affect its performance in terms of improvements in contributing to gross domestic production, foreign exchange earnings, and coffee sales volume improvement (Girma, 2017). Ethiopia is very slow in expanding and diversifying (in quality and form) its coffee exports, which is affected by world coffee price movements (Belay, 2017). Even though coffee is a major cash crop produced in the Gedeo zone, its production and productivity were hampered by different constraints, such as poor extensions services, poor access to market information, lack of physical infrastructure, lack of improved coffee variety, diseases, and pests (Zinabu et al., 2017). Most of the farm tools used to produce coffee are traditional and are operated manually (Tizazu, 2019). There is no interdependence among value chain actors. Owning old coffee trees, various diseases, plastic bags, packaging, storing for more than four months, shortage of money at the time of harvest, and the traditional way of coffee moisture testers have their roles in determining coffee quality under Gedeo zone of coffee production areas (Kidist et al., 2019).

The value chain of coffee is a long process. Many actors are engaged in the process starting from the producer and till the coffee bean reaches the consumer. Therefore, the founding of various agricultural cooperatives becomes vital. Cooperatives have been granted permission to by-pass coffee auctions, opening the way for direct export sales (Dempsey, 2006). The Yirgacheffe union is involved in the value chain in Ethiopia to provide customers directly. However, the country is not benefitted from this coffee type as expected, because the value-adding activity is insignificant (YCFCU, 2016).

Due to these, farmers, processors (industries), traders, exporters, and cooperatives in the zone complain that they are not benefitted from the existing coffee value chain. This ineffective value chain might be due to lack of market, competition, role, relationship, and government factors. Therefore, most of the problems mentioned above needs the involvement of researchers for verification and the involvement of value chain actors' support for a solution. Due to this, the researcher studies the value chain analysis of coffee in the Gedeo zone in general, with special focus on Yirgacheffe Coffee Farmers Cooperatives Union (YCFCU). The research questions formulated were: who are the actors, what are the roles of and relationships between the actors, and what are the factors that hinder the effectiveness of coffee value chain.

The objective of the study is to undertake a value chain analysis of coffee in the Gedeo zone in Ethiopia, with focus on the Yirgacheffe Coffee Farmers Cooperatives Union. More specifically, the study aims to identify actors, examine roles and relationships, and explain factors that hinder the coffee value chain.

Review of Related Literature

As the product moves from one player in the chain to another, it is assumed to gain value (Hellin & Meijer, 2006, cited in Elvira A. Zamora, 2016). Value is the amount buyers are willing to pay for what a firm provides them (Porter, 1985, cited in Kumar & P. V). Different authors define the term value chain, but Michael Porter was the first to introduce the term, in his book 'Competitive Advantage: Creating and Sustaining Superior Performance' (Porter, 1985). The author defines it as a representation of a firm's value-adding activities, based on its pricing strategy and cost structure. Kaplinsky and Morris (2001) describe value chain as the full range of activities which are required to bring a product or service from conception to the different phases of production delivery to final consumers, and finally, disposal after use. As such, the value chain can be used as a tool to disaggregate a business into major activities, thereby allowing the identification of sources of competitive advantage (Brown, 1997, cited in Elvira A. Zamora, 2016). This concept has, over the years, been the object of a fast-growing literature in economics and management (Abecassis-Moedas, 2006, cited in Elvira A. Zamora, 2016). Value chain is a collection of activities that are performed to design, produce, and market, deliver, and support its product (Ray Collins, Benjamin Dent & Lawrence Bonney, 2015). The global value chain framework focused on the nature and content of the inter-firm linkage, and power that regulates value chain synchronisation primarily between buyers and firm few tiers of supply (Gary Gereffi & John Humphrey, 2005, cited in Kumar & P. V, 2016). Value chain analysis has been employed to examine and evaluate entire industries and industry clusters, as well as specific systems within firms. It has likewise been employed to examine activities that are increasingly spread over several countries or the so-called "global value chain" (GVC). This segment of the value-chain literature is also known as global commodity chains, global production networks, or international supply chains (Sturgeon, Linden & Zhang, 2012, cited in Elvira A. Zamora).

Material and Methods

Description of the Study Area

The study was conducted in the Gedeo zone, which is located in the southern part of Ethiopia, about 117 kilometres from Hawassa city. The zone is well known for producing and supplying high quality coffee (Yirgacheffe coffee) to the international market. The area is located between longitude of 6° 18′ 06″ N and latitude of 38° 24′ 31″ E, at an elevation between 1500-3000 m.a.s.l (Google Earth, 2016).

Data Source and Collections Method

Primary data was collected through a questionnaire from sampled farmers and key informant interviews were conducted with officials of cooperatives and executives of the farmers' unions. The study used cross-sectional survey design. The study problem was answered through a combination of qualitative and quantitative approach in order to reduce the limitation, and increase the quality and flexibility of the data (Robinson, 1998). Questionnaires were designed for farmers. Through the course of field visits, the questionnaires were modified. The structured formal interview guidelines were arranged and piloted before data collection, in order to include all the necessary information. The formal surveys were made with randomly selected farmers using the pre-tested structured questionnaires. In addition, key informant interviews were conducted with officials of the cooperatives and executives of the unions. Enumerators, who have knowledge of the local language and are acquainted with the culture of the local people were selected, trained, and employed for data collection.

Secondary data was collected from district coffee marketing cooperatives, Federal Cooperatives Agency, Ethiopia Coffee and Tea Authority and Yirgacheffe Coffee Farmers Cooperatives Union.

Sampling Technique and Sample Size

The union is currently operating in six districts (Bule, Gedeb, Kochore, Dilla Zuria, Yirgacheffe & Wonago) in the Gedeo Zone (YCFCU, 2016). The population for this study comprises all coffee-producing households in the high coffee-producing kebele/village in the Gedeo zone. This study employed multi-stage sampling procedures. In the first stage, the Yirgacheffe district was purposively selected due to its high potential of coffee production and as a major supplier of Yirgacheffe coffee from all woredas (YCFCU, 2016). Secondly, out of seven primary coffee cooperatives (Aramo, Domarso, Edido, Hafursa, Haru, Koke & Koga) in the district, four (Konga, Koke, Hafursa & Domarso) were selected randomly for the purpose of the study by taking into account the time and financial shortages and the wide geographical disparity of the cooperatives. Since a population from which a sample is to be drawn constitutes a homogeneous group, simple random sampling technique was generally applied. A list of farmers was identified in each primary cooperative using Probability Proportional to Size (PPS) sampling technique, against the total number of coffee producers in the kebeles, which constituted the sampling frame. A total of 121 household heads were selected randomly from coffee producers of primary cooperatives.

Data Analysis

Descriptive and correlation statistics were used to analyse the data. Descriptive statistics was used to identify the existing coffee value chain and an analysis of the factors that hinder smooth flow of coffee value chain was studied. On the other hand, correlation analysis was conducted to measure the strength of the association between independent and dependent variables. Content analysis has also been conducted on information collected through structured interviews with officials of district primary cooperatives and executives of YCFCU.

Results and Discussions

Descriptive Analysis

The interview results and the descriptive statistics of the variables of the study are presented in Table 1.

Table 1: Respondent Views on Roles, Relationships, and Problems of Coffee Value Chain

Sr. No.	Item	Level of Agreement	Frequency	%	Mean	Std. Deviation
1	Each actor plays a role in the coffee value chain of the union	Strongly Disagree	2	1.8	4.04	.977
		Disagree	3	2.6		
		Neutral	31	27.2		
		Agree	31	27.2		
		Strongly Agree	47	41.2		
	Total		114	100.0		
2	Relationship is one of the problems in the coffee value chain	Strongly Disagree	1	.9	3.71	.957
		Disagree	12	10.5		
		Neutral	31	27.2		
		Agree	45	39.5		
		Strongly Agree	25	21.9		
	Total		114	100.0		
3	Members face problems related to roles	Strongly Disagree	2	1.8	4.37	.915
		Disagree	-	-		
		Neutral	22	19.3		
		Agree	20	17.5		
		Strongly Agree	70	61.4		
	Total		114	100.0		
4	Members face problems with access to market	Strongly Disagree	13	11.4	4.11	1.322
		Disagree	1	.9		
		Neutral	12	10.5		
		Agree	22	19.3		
		Strongly Agree	66	57.9		
	Total		114	100.0		
5	Government policy is one of the problems in the coffee value chain	Strongly Disagree	3	2.6	4.04	.990
		Disagree	-	-		
		Neutral	35	30.7		
		Agree	27	23.7		
		Strongly Agree	49	43.0		
	Total		114	100.0		
6	Financial issue is one problem in the coffee value chain	Strongly Disagree	2	1.8	4.32	.964
		Disagree	1	.9		
		Neutral	25	21.9		
		Agree	16	14.0		
		Strongly Agree	70	61.4		
	Total		114	100.0		
7	Competition is one of the problems in the coffee value chain	Strongly Disagree	-	-	4.17	.882
		Disagree	1	.9		
		Neutral	33	28.9		
		Agree	26	22.8		
		Strongly Agree	54	47.4		
	Total		114	100.0		
8	Human and physical resources are problems in the coffee value chain	Strongly Disagree	2	1.8	4.12	.811
		Disagree	1	1 .9		
		Neutral	16	14.0		
		Agree	57	50.0		
		Strongly Agree	38	33.3		
	Total		114	100.0		

Relating to each actor's role in the chain, a majority (41%) of the farmers agreed on the issue. However, 2% and equally 27% of the respondents replied that they disagreed, were neutral, and agreed, respectively.

Moreover, the mean value of the farmers' respondents is 4.04. In addition, all these values show that there had always been different important roles played by the actors along the chain. Data obtained from the key informant interviews indicated that there is still negligence by some actors in achieving the stated roles. From this finding, one can conclude that actors play different roles in the coffee value chain of the union.

Around 39% of farmers agreed that relationship was one of the problems in the coffee value chain. Developing a strong link between the value chain actors in a chain is very important to increase coffee production, productivity, sales value, and marketing at an international level (Alemayehu Asfaw Amamo, 2014). As a result, the unions have to create a conducive environment to minimise the risks they may face.

About 61% of farmers strongly agreed that members face problem related to roles. Cooperatives in the earlier regimes did not play their roles for different causes (Dagnachew & Adissie, 2009). Similarly, the cooperatives in the study area faced problems in order to play their roles properly. From this finding one can conclude that members faced problems related to roles.

With regard to the statement 'members face problems with access to market', 57% of farmers strongly agreed, with a mean value of 4.11. Only 12.3% farmers disagreed. In supporting the survey, the key informant interview results with both officials support the fact that access to the market is one of the problems of the chain that confronts the smooth flow of goods. Marketing is another factor that affects coffee production (Margaret Njeri Gathura, 2013). Therefore, based on this finding one can conclude that access to market is one of the problems that prohibits the effective achievement of the actors' roles in the coffee value chain.

Of the total respondents, 43% agreed that government policy is one of the problems in the coffee value chain. Cooperatives in Ethiopia face three challenges, such as lack of comprehensive policy and strategy; low capacity of cooperatives leadership; and management and lack of finance by cooperatives (Bezabih, 2012). Therefore, one can conclude that government policy is a problem that constrained the activities of the cooperatives.

Regarding whether financial issue was a problem, a majority of the farmers (61%) strongly agreed. However, 22% were neutral on the issue. Moreover, the mean value of 4.34 for farmers' respondents shows that there is a high level of agreement. Based on the findings of Bezabih (2012), the major finance related constraints of Farmers Cooperatives are: unsuitability of lending policy for Cooperatives, limited number of Cooperative Banks, and limited saving capacity of Farmers Cooperatives. Thus, one can conclude that financial issues is one of the challenges cooperatives faced in the coffee value chain.

About 47% of farmers strongly agreed that competition is one of the problems in the chain. In cooperatives, efficiency increased through minimising business operation costs while maintaining quality of services (Rouse & Von Pischke, 1997).

Around 50% of farmers agreed that human and physical resources were problems in the coffee value chain. Most of the cooperatives in our country are characterised by limited institutional capacity, inadequate qualified personnel, low entrepreneurial skill, lack of resources, lack of market information, and participation by poor members in the different activities (Alema, 2008; Dawit, 2005; & Alemayehu, 2002). The results in this study match other similar studies. From this the researcher can detect that human and physical resources are problems in the coffee value chain.

Table 2: Weighted Mean and Rank of Variables

Variable	Weighted Mean	Std. Deviation	Rank
Market relation	4.0417	.56826	1
Competition issues	4.0211	.80984	2
Actor's role	3.8743	.59972	3
Access to market	3.7018	.51765	4
Government issue	3.6798	.95502	5

As depicted in Table 2, market relation, with a mean value of 4.0417, strongly affects the performance of value chain analysis of coffee. Competition issues, actor's role, access to market, and government issues, with mean values of 4.0211, 3.8743, 3.7018, and 3.6798, respectively affect performance of value chain analysis of coffee. Market relation and competition issues ranked high. Therefore, concerned stakeholders have to consider the rank of these variables to take measurements accordingly.

Coffee Value Chain Mapping

Finally, a generic figure showing the coffee value chain of the YCFCU and a diagram based on information collected in the survey study is presented in Fig. 1.

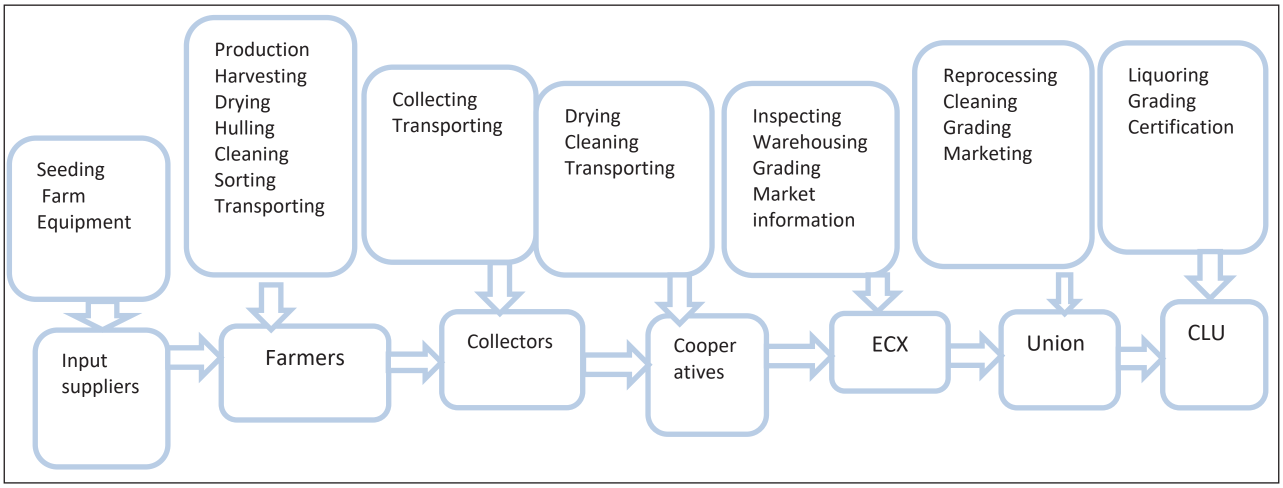

Fig. 1: Map of Coffee Value Chain of YCFCU

Actor's Relationship and Roles in the Coffee Value Chain of the YCFCU

The following indicate the survey results of value chain actors and their main activities in the chain.

Input Suppliers

Suppliers of inputs for the coffee production are primary cooperatives and the government. Sometimes, model members of the cooperatives supply coffee seedlings, while farm tools are provided by traders in the towns.

Farmers

Farmers are the main actors in the value chain who carry out most of the value chain activities, right from farm input preparation to producing the final output of coffee. The major value chain functions that coffee producers perform include: production, harvesting, drying the coffee beans, sorting the cherries, cleaning, and storing.

Collectors (Agents)

They represent the cooperatives in the market. Moreover, they buy coffee from the members of the cooperatives with a price advantage. Most of them were seasonal workers and their number is high during the coffee collection period. They transport the coffee from the marketing centre through traditional means of transportation to the warehouse of the primary cooperatives.

Primary Cooperatives

They are located in different kebeles of the district. Moreover, they mainly supply coffee. They buy coffee from the members of the cooperatives and supply to the ECX warehouse at Dilla for inspection of quality and grading; they are then transported to Yirgacheffe Coffee Farmers Cooperatives Union in Addis Ababa. The union buys coffee according to the current price set at ECX for the specific kind of coffee.

Yirgacheffe Coffee Farmers Cooperative Union (YCFCU)

YCFCU is one of the coffee-marketing cooperatives established in 2002, currently representing over 43,794 farmers organised into 27 primary cooperatives located in Gedeo, southern Ethiopia. This is one of the most famous coffee-growing regions in the country, and the only source of Yirgacheffe coffee. The union played different roles, such as providing a warehouse service, supporting coffee processing, making certain of the supply of organic coffee directly from its origin, providing modern farm inputs, offering saving and credit facilities, and representing its members.

Correlations Analysis

Table 3: Results of Correlation

	PVCAC	AM	GI	FI	CI	HPI	MR	AR
PVCAC Pearson Correlation N	1 114							
AM Pearson Correlation	.300** .001	1						
GI Pearson Correlation	.315** .001	.196** .037	1					
FI Pearson Correlation	.019 .843	−.379** .000	.258** .006	1				
CI Pearson Correlation	.388** .000	.306** .001	.343** .000	.081 .392	1			
HPI Pearson Correlation	.083 .378	.050 .600	.244** .009	−.014 .880	.028 .770	1		
MR Pearson Correlation	.443** .000	.233** .013	.303** .001	.177 .060	.244** .009	.270 ** .004	1	
AR Pearson Correlation	.859** .000	.217** .021	.143 .130	−.102 .282	.343** .000	−.048 .611	−.025 .796	1

** Correlation is significant at the 0.05 level (2-tailed).

N.B. Performance of value chain analysis of coffee (PVCA), Access to Market (AM), Government Issues (GI), Financial Issues (FI), Competition Issues (CI), Human and Physical Issue (HPI), Marketing Relation (MR), Actors Role (AR).

The results of correlation analysis is given in Table 3. The results indicate that there was strong correlation between performance of value chain analysis of coffee and actors' roles, which shows that the actors' role increases with the performance of value chain analysis of coffee, with r = 0.859 (see Table 3).

In relation to marketing relation on performance of value chain analysis of coffee, the result was positive. This points out that marketing relation increases with increasing performance of value chain analysis of coffee.

In addition, competition issues are weakly correlated with the dependent variable of performance of value chain analysis of coffee, with r = .388. The independent variables, government and market issue, are also moderately correlated with the dependent variable of performance of value chain analysis of coffee.

On the contrary, the independent variables, financial and human and physical issues, do not have a linear correlation with the dependent variable of performance of value chain analysis of coffee, with r = .019 and .083, respectively.

Export Amount of YCFCU in Value and Volumes

As indicated in Fig. 2, the export amount of YCFCU in value in the year 2010 was 1,110.54 tonnes. This value was increased in 2011 to 1,208.70. However, the export value was decreased in the year 2012 to 852.96 tonnes. On the contrary, the export value was increased to 1,243.80, 1,562.70, and 1,627.92 tonnes in the years 2013, 2014, and 2015, respectively. But the export value again decreased in the year 2016 to 154.00 sum of tonnes. In general, the export amount of YCFCU shows fluctuation in sum of tonne in different years.

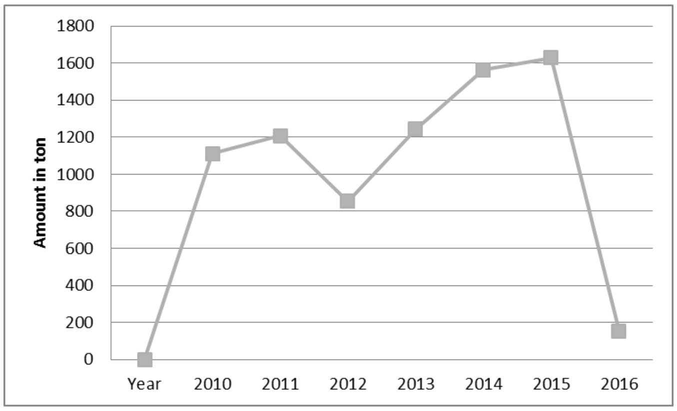

Fig. 2: Export Amount of YCFCU in Value

As shown in Fig. 3, the export amount of YCFCU in volume in the year 2010 was 5,627,248.66 USD. This volume was increased in 2011 to 7,469,427.74 USD. However, the export volume decreased in the year 2012 to 6,991,971.38 USD. On the other hand, the export volume was increased to 9,036,611.26, 10,449,016.59, 13,564,900.45, and 18,780,805.08 USD, in the years 2013, 2014, 2015, and 2016, respectively. Therefore, this indicates that the export amount of YCFCU in volumes increased.

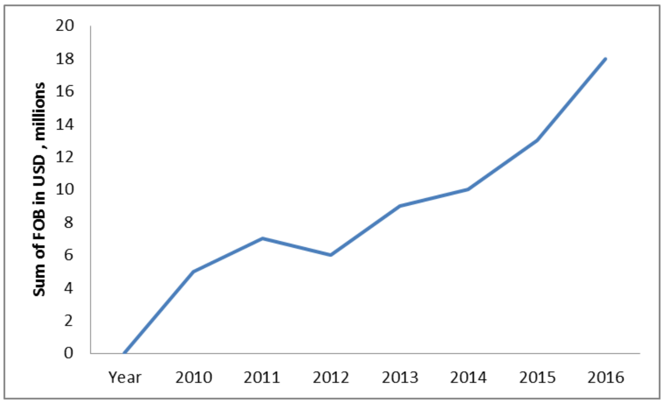

Fig. 3: Export Amount of YCFCU in Volume

Conclusions

The present study delivers insight into relationships, roles, and challenges in the coffee supply chain of the study area. Eight actors were identified in the coffee value chain.

The major issues identified in the chain were weak government policy, lack of strong relationship, lack of market, competition, and lack of human and physical resources. There is a need to improve government policy related to coffee cooperatives since the chain takes the lion's share of the foreign revenue in the country. The role played by each actor is essential for effective achievement of the chain activities. Therefore, there is a need to integrate operations in the chain. The primary coffee marketing cooperatives are expected to provide different means of transportation for the members to actively participate in the market. Furthermore, the competition level with each actor has to be increased to take advantage of and benefit from the profit. The supply of coffee production and processing equipment from the cooperatives was inadequate for the operations; therefore, the union should provide adequate modern processing machines that play a great role in the value adding process of coffee. In some institutions in the study area, the human and physical issues should be improved. For instance, Dilla Universities as academic institutions should provide a new means of approaching the coffee cooperatives in the area and the government is expected to improve the infrastructural facilities of the study area.

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