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RESEARCH ARTICLE

Efficacy of coffee farmers' cooperatives in Gimbo Woreda, Kafa Zone, Ethiopia

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Abstract

This study aimed to examine the trend of cooperative unions towards quality coffee production and supply and identify the challenges of coffee farmers' cooperative unions in Gimbo woreda (district). Ten cooperative unions located in the woreda were selected to conduct the study. To achieve the objective of the study descriptive research design was employed and to obtain relevant information, 333 union members were selected using a simple random sampling technique. Both primary and secondary data were collected through questionnaires, interviews and document analysis. Collected data were analyzed both qualitatively and quantitatively. The study revealed that farmers are effectively applying agronomic, physiological, pre- and post-harvest activities and producing quality coffee. However, they are not getting economic benefits from their product. Due to this, they are not motivated to produce high amounts and quality of coffee on their farmland. Cooperatives are not effectively providing services for their members. The government is also playing a role in improving the performance of cooperatives. Thus, it is recommended that all concerned bodies need to give due attention to improving the performance of cooperatives and members' economic benefit.

Keywords: Coffee, Economic benefits, Embezzlement, Farmers' cooperative union, Marketing.

Introduction

Coffee is an important component of the overall economy and a major source of foreign currency for many coffee-producing countries. 25–30 million smallholder farmers mostly farm it in around 80 tropical nations (Michiel *et al*., 2014). The economies of many countries in Africa and South America depend on the revenue from coffee production for their stability and development (USDA, 2016). Many countries, including Ethiopia, cultivate coffee, which is exported as a raw, roasted or soluble product to more than 165 countries worldwide, providing a livelihood for an estimated of 100 million people around the world (ICO 2014). Ethiopia is the home and cradle of the biodiversity of Arabica coffee seeds and also it is the center for origin, diversification, and dissemination of the coffee plant (Bayetta 2011). Ethiopia remains the largest producer of coffee in Africa and is the fifth largest coffee producer in the world next to Brazil, Vietnam, Colombia and Indonesia, contributing to about 4.2% of the total world coffee production (ICO 2014). Coffee is Ethiopia's major foreign currency source and contributes more than 35% of the total export earnings (FAO, 2008). More than 90 percent of coffee produced in the country comes from smallholder farmers, and the rest 10 percent is from medium and large scale producers (USDA, 2016).

Cooperatives play vital role in carrying out coordinated and comprehensive development efforts in coffee, especially in Ethiopian coffee markets. Where farm holdings are small, application of modern technology is very low and production is mainly of a subsistence nature with low marketable surpluses (Zerihun Alemayehu 2009). Coffee in Kafa zone is produced in all kebeles and serves as a major means of cash income for the livelihood of coffee farming families. Despite the favorable climatic conditions, variety of local coffee types for quality improvement and long history of its production in Kafa Zone, coffee producers are not benefitting from their coffee. Quality coffee production is directly related to coffee price and price is related to the economic benefit of producers. Quality problems are mainly associated with poor agronomic practices, poor post-harvest

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management, shortages of processing technologies (wet & dry process) and storage practices. The impacts of climate change on the quality and quantity of coffee production has gained recent attention. Nevertheless, previous studies have hardly addressed the impacts of climate change on specialty coffee, an important aspect of the global coffee sector.

Several studies have documented the problems related to coffee production and coffee trade. So far, very little attention has been paid to the role of farmers cooperatives. There has been no detailed investigation of their effects on the productivity of coffee. The wild coffee motivated different stockholders to manage the wild coffee forest and maintain its natural ecology since they drive benefits from it. The study provides signals to give attention for the challenges and possible solutions for the bright future of forest coffee production. Hence, the author believes that the farmers' cooperatives' involvement in coffee productivity plays an important role and therefore, this study deals with the current activities of the cooperative union at Gimbo Woreda, Kafa zone based on the data collected. The study focuses on the production of quality coffee and the economic benefit of coffee farmers in the study area. The aim of the study was to examine the trend of cooperative unions towards quality coffee production and supply in Gimbo woreda and identify the challenges of coffee farmers' cooperative unions.

Methodology

Description of the Study Area

The present study was carried out in Gimbo woreda which is located between 7°-23' and 7°-47' North, and 36°-00' and 36°-47' East in the northern central part of the Kafa zone, Ethiopia (Figure 1). It is located about 452 km away from Addis Ababa (the capital city) towards the south-west.

The study area receives rainfall almost all year round. Main rainy season extends from March to September and ranges between 150 to 300 mm (Figure 2). Gimbo woreda is one of the parts of the southwest Ethiopia highlands which receive the highest rainfall in Ethiopia. This is attributable to the presence of evergreen forest cover on top of the windward location to the moist monsoon wind. The mean annual temperature ranges between 15 and 22.5°C (Figure 3).

The altitude of the area ranges between 1000 to 2000 masl. The Kafa landscape is dissected by numerous small to large rivers and exhibits highly diverse topography, including flat plateaus, undulating to mountainous terrain and very steep slopes. The land of kafa is one of the richest area in Ethiopia for natural resources, including vegetation, streams, mineral waters, animals, birds, spices and mines. Of the total 23,763 ha forest coverage, about 56.59% is wild coffee forest.

The major occupation in the woreda is agriculture, though people are also engaged in homestead husbandry. The main agricultural crops cultivated in the woreda are maize, sorghum, teff and haricot bean. Cattle, sheep, goats, poultry, donkeys, horses and mules are the major livestock kept by the farmers. Non-timber forest products such as honey, false cardamom (*Afromomum corrorima*) and wild pepper (*Piper capense*) are important means of income.

Research Design, Data Source and Data Type

This study used a descriptive survey design to conduct a study on the primary coffee farmers' cooperative unions' performance and the economic benefit of the members. A combination of quantitative and qualitative approaches was used in the data analysis. All required data were collected from both primary and secondary sources. A questionnaire

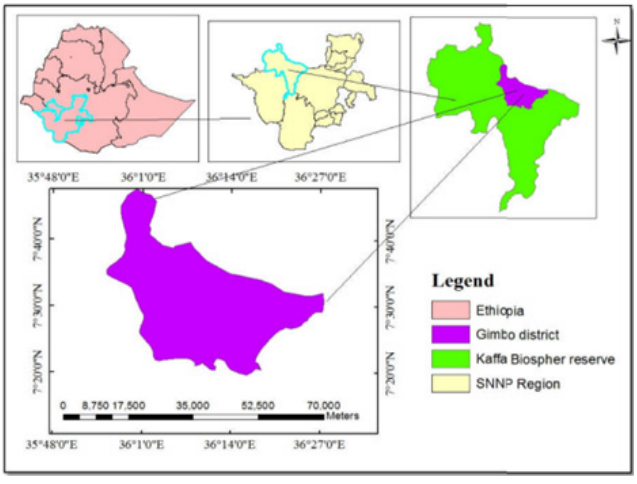

Figure 1: The map of the study area.

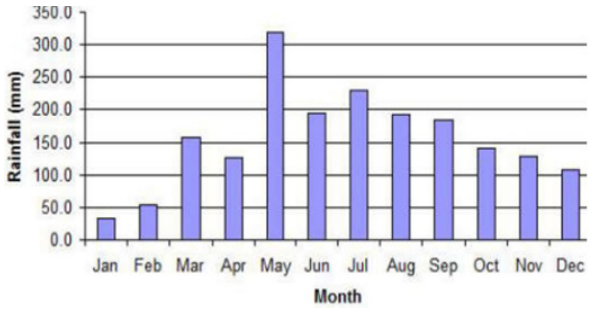

Figure 2: Mean monthly rainfall in the study area.

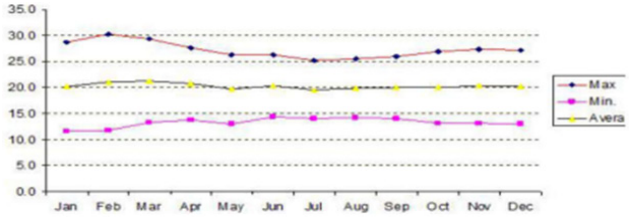

Figure 3: Mean monthly temperature of the study area.

survey, key informants interview and focus group discussion were the main tools for data collection. Focus group discussion was conducted with three randomly selected members from three randomly selected unions. The group discussion checklist was prepared and used to collect the necessary data during the discussion. Five officials with different responsibilities from the Agriculture and Rural development office of Gimbo woreda staff were selected as key informants for interview. This is because the selected key informants assumed to be well aware of the problem and could provide the relevant information required to achieve the intended objectives of the study. The secondary data for this research were gathered from related published and unpublished materials, books, journals and reports of governmental organizations.

Sample Size and Sampling Techniques

In this study, a three-stage sampling technique was used. In the first stage, Gimbo woreda was selected purposively based on its convenience to the researcher and its high potential. At the second stage, all ten coffee farmers' cooperative unions available in the woreda (Michiti, Kayakela, Kuxi, Tepibuti, Cheraba, Zinagaj, Medfegna, Yeyebito, Diriand Dakiti) were selected using random sampling technique (Table 1). Coffee producers in the selected coffee farmers' cooperative unions were used as the sampling frame and the sampling units were the household heads. The sample size was determined following the procedures of probability proportional to size technique by using the formula (Cochran, 1977):

$$n = \frac{Z^2_{\alpha/2} p(1-p)}{d^2}$$

Where, **n** is the sample size, $Z_{\alpha/2}$ is the standard normal distribution at α, **p** is the population proportion of peasant associations and farmers, **d** is the absolute precision.

Where:

- Proportion (p)= 50% (assumption)
- Confidence level of 95% chosen
- Margin of error (d)= 5%

Because the total population size is less than 10000, the sample size was corrected using the following formula:

$$Corrected\ sample\ size = \frac{n \times N(384 \times tolal\ ppl)}{n + N\ (384 + tolal\ ppl)}$$

Where as:

- Total population size (members of the union) (N)= 2527

$$\frac{n \times N}{n + N} = \frac{384 \times 2527}{384 + 2527} = \frac{970368}{2911} = 333$$

By substituting in the formula the sample size became 333. With adjustment for non-response (5% contingency) the final sample size was 333+16= 349.

Additionally, in order to obtain representative samples from the total population, the researcher employed the probability-sampling technique. Probability sampling the researcher has employed a stratified sampling technique in order to obtain a representative sample from each stratum (ten primary cooperative unions). For this purpose, we usually follow the method of proportional allocation, under which the size of samples from different strata is kept proportional to the size of the strata. If P_i represents the proportion of the population included in stratum *i*, and *n* represents the total sample size, the number of elements selected from stratum *i* is *n. Pi* By using the formula:

P= Proportion
n= Sample size
N= Population

$$P = \frac{n\ x\ pi}{N}$$

As the above table shows, from all 2527 primary cooperative union members in Gimbo woreda, the researcher has taken 349 samples. These samples were taken by using a computerized simple random sampling technique from the total population. In the third stage, two primary cooperative union managers and one woreda cooperative office manager were selected purposively for interview based on their field of work and managerial position.

Data Analysis

In this study, data were analyzed both qualitatively and quantitatively. Using Statistical Package for Social Science (SPSS) software version 21, quantitative data were analyzed, converted to a percentage, and used for numerical interpretation. Various descriptive statistics tools such as tabulation, graphs, diagrams, and charts were used. Appropriate statistical tools such as mean, percentage and frequency of occurrence were used to study climate variability's effects on coffee production. Data obtained from interviews and focus group discussions were summarized and triangulated to better understand the study subject matter and to better generalize qualitative data.

Ethical Considerations

The researcher has followed the ethical principles of scientific study. Collected information were treated confidentially and used for this research purpose only. Additionally, the literature consult in this study are acknowledged appropriately. Further, during data collection, the will of each participant were checked to be as respondents in the study.

Results And Discussion

The General Background of the Respondents

Surveyed respondents' background was assessed based on their sex, age, educational status and family size. As indicated in Table 2, the sex characteristics of the respondents depict that 82.9% of household heads were male and the rest, 17.1% were females. This indicates that there is a gender imbalance in cooperative membership.

Regarding age group of respondents, a large portion of respondents that are 56.8% fall within the age group of 33-48. The respondents who are older than 48 or between 18–33 make up 27.9 and 15.3% of the total, respectively. It

Table 1: Samples taken from coffee-growing respondents

Name of Cooperative	*Total Members*	*Sample Size*
Michiti	388	54
Kayakela	246	34
Kuxi	558	77
Diri	329	45
Charaba	223	31
Zingaj	267	37
Medfegna	211	29
Tepibuti	44	6
Yeyibito	220	30
Dakiti	41	6
Total	2527	349

is clear from this that the majority of respondents are in the working age group. Thus, this has affirmative implications for quality coffee production.

Respondent's education levels were generally low in the survey. As indicated in Table 2, 30.3% of the respondents were illiterate; 29.42% studied from grade 1-8; 20.42% can read and write and the remaining 6% have reached above grade 12. A study conducted by Zemedu (2004) revealed that level of education is a significant determinant of farmers' adoption of improved agricultural technologies.

The family size of respondents indicates that the number of children was between three and six in 45.3% of the respondents, whereas 29.7% of respondents have less than three children and the remaining 24.9% have more than seven children. This depicts that many respondents have large family size, which can lead them to economic instability.

Coffee Farms Land Size and its Contribution for the Livelihood of Respondents

As indicated in Figure 4, 67% of the respondents have 2 ha or less farming land, whereas the 18% have 2-3 ha and the remaining 15% own more than 3 ha farmland. This shows that most of the farmers have not more than 2 ha of land.

Figure 5 shows the respondents' relative holdings of coffee farm fields from their total farmlands. It is evident from the data that coffee covered 25% or less of the land on

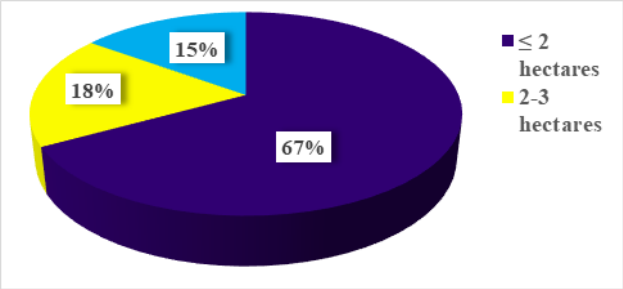

Figure 4: Extent of land ownership among cooperative union members.

Table 2: Socio-demographic characteristics of respondents (n=333).

Variable	*Frequency*	*Percentage (%)*
Sex		
Male	276	82.9
Female	57	17.1
Age		
>18 and < 33 years	51	15.3
> 33 and < 48 years	189	56.8
Above 48 years of age	93	27.9
Educational Status		
Illiterate	101	30.3
Literate (read &write)	68	20.42
1–8	98	29.42
9–12	46	13.81
Above grade 12	20	6
Family size		
Less than 3 children	99	29.7
Between 3 & 6 children	151	45.3
More than 7 children	83	24.9

Table 3: Opinion regarding the contribution of coffee to their livelihoods among cooperative union members (n=333)

Contribution of coffee to the livelihoods of the surveyed respondents	*Frequency*	*Percentage (%)*
No	15	4.5
Little	45	13.5
High	166	50
Very high	107	32

71.2% of the respondents' farms. In contrast, the remaining 28.8% of respondents' coffee farmland covered 26–50% from their total farmland.

The finding of the study revealed that coffee contributes the highest share to the income of surveyed respondents. As can be observed from Table 3, over 80% of respondents highly depend on income generated from coffee products. The rest 13.5 and 4.5% of respondents said coffee has little or no contribution in their livelihood. This indicates that for most respondents, income generation is based on the production of coffee. Data obtained through FGD also showed that most respondents produce coffee more than other crops for their livelihood.

Experience has a positive impact on any work. Figure 6 shows that 76% of the respondents have more than 20

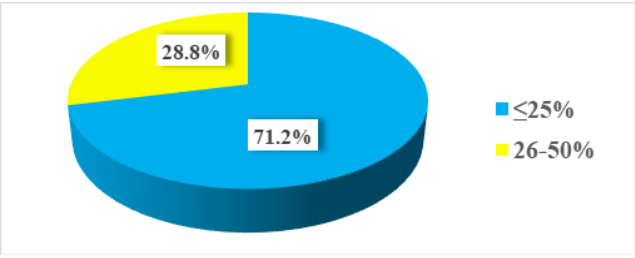

Figure 5: Percentage of land allocated for coffee production among cooperative union members.

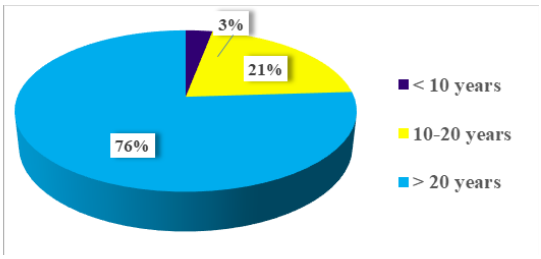

Figure 6: Experience among cooperative union members.

Table 4: Description of type of coffee farm among cooperative union members (n=333)

Item	*Variable*	*Frequency*	*Percentage (%)*
What type of coffee do you produce?	Forest coffee	14	4.2
	Semi-forest coffee	69	20.7
	Garden coffee	250	75.1

Table 5: Pruning, mulching, composting and weeding of coffee farm among cooperative union members (n=333)

No.	*Item*	*Variable*	*Frequency*	*Percentage (%)*
	Do you prune your coffee?	Yes	248	74.5
		No	85	25.5
	Do you apply mulching in your coffee?	Yes	207	62
		No	126	38
	How many times do you weed your coffee in a year?	Once	62	19
		Twice	230	69
		More than twice	41	12
	Do you use organic fertilizer (compost) in your coffee plant?	Yes	231	69.4
		No	102	30.6
	Do you periodically check your coffee plant for the existence of disease?	Yes	309	92.8
		No	24	7.2

years of coffee farming experience whereas the remaining 21 and 3% have 10–20 years and below 10 years of farming experience, respectively. This shows that most of the respondents have a lot of experience in coffee farming.

Coffee production Systems

In the production of coffee, a number of activities are involved from planting to harvesting. The effective implementation of these activities helps to produce quality coffee.

Agronomic Aspects of Quality Coffee Production

Ethiopia's coffee uses forest, semi-forest, garden, and plantation methods. From these methods, forest, semi-forest and garden coffee production methods are mostly practiced in the study area.

As it can be observed from Table 4, regarding the type of coffee produced by farmers, 75.1% of them produce garden coffee. The remaining 20.7 and 4.2% of them produce semi-forest and forest coffee, respectively. This finding shows that coffee farmers are mostly producing garden coffee. Garden coffee has higher productivity as compared to forest coffee and semi-forest coffee. Thus, producing a high amount of garden coffee is helping farmers get better products.

Pruning practice has its own role in the quality of coffee. Pruning aims to create a well-structured, healthy tree that would produce good cherry yields over a long period (Michael *et al.*, 2014). In relation to this, analysis result in Table 5 shows that 74.5% of the respondents pruned and the remaining 25.5% did not prune their coffee. This shows that, most respondents are pruning their over-aged coffee trees.

Mulching enhances soil moisture status through improved infiltration. Regarding this, 62% surveyed respondents stated that they apply mulching in their coffee farm; the remaining 38% said that they do not. This depicts that the majority of the respondents are applying to mulch and getting better yields.

Weeding is one of the regularly applied operations carried out by all farmers and it is important too as it reduces the productivity and quality of crops. However, time spent in coffee production vary from farmer to farmer. The finding showed that 69% of the respondents weed their coffee field twice a year, 19% of respondents weed their coffee only once a year and the remaining 12% weed their coffee more than twice a year. This shows that most farmers are weeding their coffee at least twice a year.

In relation to the utilization of fertilizers, 69.4% of respondents claimed that they use organic fertilizers in their coffee farm. However, the remaining 30.6% of respondents do not use organic fertilizers. This result indicates that most farmers use organic fertilizers in their coffee farm.

Pests and disease attacks can affect the cherries directly or cause them to deteriorate by debilitating the plants, producing immature or damaged fruits and resulting in lower-quality beans (Wintgens, 2014). Thus, it is necessary to observe the existence of disease in the coffee plant. Regarding this, 92.8% of the respondents observe and the remaining 7.2% does not observe. This depicts that most respondents observe their coffee plant's health.

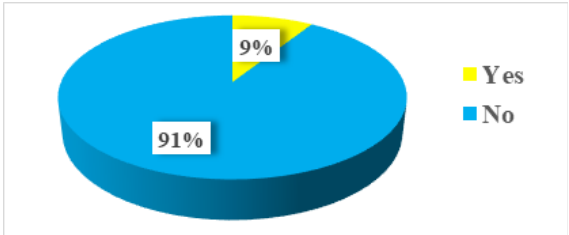

Figure 7: Opinion regarding the role of the unions in creating additional income among cooperative union members

Table 6: Activities done during harvesting among cooperative union members (n=333)

No.	*Items*	*Variable*	*Frequency*	*Percentage (%)*
	At what maturity stage do you harvest your coffee?	Full maturity stage	237	71.2
		Green stage	78	23.4
		Immature stage	18	5.4
	What type of coffee harvesting do you use?	Selective picking	311	93.4
		Strip method	8	2.4
		From ground	14	4.2
	Who often harvest your coffee?	Own family	261	78.4
		Daily laborer	12	3.6
		Both	60	18

Table 7: Activities done during post-harvesting among cooperative union members (n=333)

No.	*Items*	*Variable*	*Frequency*	*Percentage (%)*
	What type of coffee do you sell to your union?	Dried coffee	245	73.6
		Red bean coffee	20	6
		Both	68	20.4
	Where do you dry your coffee bean?	On cemented floor and mesh wire	93	27.9
		On wooden bed and bamboo	240	72.1
	Do you have a quality storage place?	Yes	216	64.9
		No	117	35.1
	How long you store coffee in the store?	<4 months	185	55.6
		> 4 months	148	44.4

Table 8: Opinion on payment of regular dividend among cooperative union members (n=333)

Item	*Variable*	*Frequency*	*Percentage (%)*
Payment of regular dividend	Strongly Disagree	57	17.1
	Disagree	166	49.8
	Neutral	33	9.9
	Agree	77	23.1

To increase coffee yield, productive packages like pruning, mulching, composting and weeding need to be implemented.

Quality Coffee Production: Harvesting and Post-Harvesting Factors

A number of activities needed to be done during and after harvesting to get quality coffee. During coffee harvesting, it is necessary to check the maturity stage, use effective harvesting methods and decide on how and who is going to harvest the coffee.

Activities During Harvesting Time

As can be seen from Table 6, respondents were asked about the maturity stage they harvested the coffee. Their response showed that 71.2% of them harvest coffee in full maturity stage, 23.4% at green stage and the remaining 5.4% harvest immature coffee. This shows that the majority of the respondents harvest their coffee at full maturity stage.

The type of coffee harvesting has its own impact on quality coffee production. It is widely agreed that traditional hand-picking produce the best quality coffee by decreasing the percentage of defects in coffee beans (Yigzaw Dessalegn, 2015). In relation to this, respondents were asked about the type of coffee harvesting methods they use. Based on this, 93.4% of them use selected picking. The remaining 2.4% and 4.2% use strip method and harvesting from ground, respectively. This shows that most respondents are using selected picking, which positively impacts the quality of coffee.

Regarding harvest of coffee, 78.4% respondents said family members harvest their coffee; 3.6% said they use daily laborers and the rest 18% said they use both. This shows that coffee harvesting by family is the dominant one.

Post-harvest Activities

Post-harvest processes have significant effects on coffee quality. Processing is a very important post-harvest activity in coffee production and plays a crucial role in quality determination. Coffee is either processed by wet or dry methods, which vary in complexity and expected quality of the coffee (Jacquet *et al.,* 2012). According to Yigzaw

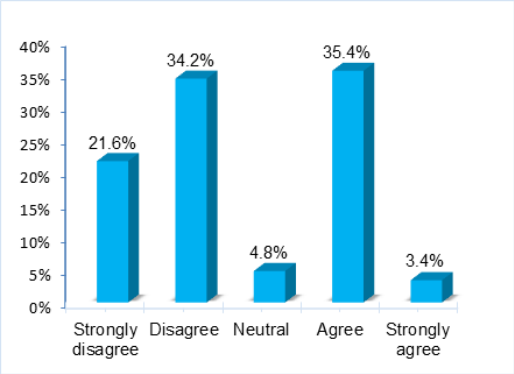

Figure 8: Opinion on the improvement of their living conditions among cooperative union members.

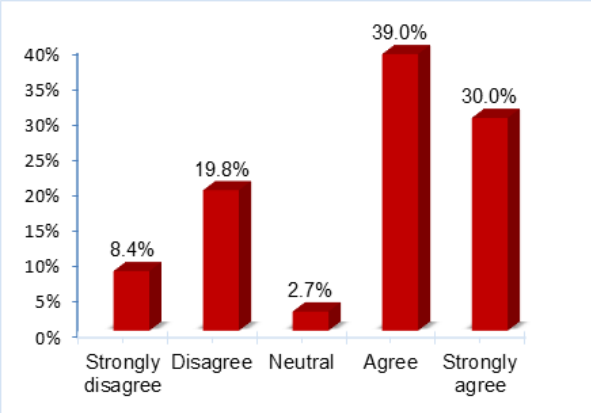

Figure 9: Opinion on the role of unions in providing credit service among cooperative union members.

Dessalegn (2015), wet-processed Arabica coffee is aromatic with high acidity and some astringency, while dry-processed is less aromatic and less acidic but with the greater body. The perceived acidity of washed coffees is also significantly higher than the acidity found in naturally (dry) processed coffees. This is likely due to an increase in the body of naturally processed coffees relative to wet-processed coffees since the body masks the coffee's acidity.

In relation to this, questions related to post-harvest activities were raised (Table 7). In the first question, respondents were asked about the type of coffee they sell to their union. According to their reply, 73.6% of them deliver dried coffee to the union; 20.4% provide both dried and red bean coffee and the remaining 6% provide red bean coffee. This shows that the majority of the respondents sell dried coffee for the union. However, wet-processed coffee has better market price than dried one. According to Negussie *et al.* (2011), wet processing method results in high mean values for good cup quality (attributes like acidity, flavor, odor) compared to the dry processing method. Hence, it can be concluded that wet processing method is the best approach to obtain fine and typical quality flavor in the cup that attracts consumers, according to their preference in the international market. Farmers of the study area to be educated and trained for wet method. The coffee drying area has a crucial impact on the quality of coffee. In relation to this, respondents were asked where they dry their coffee beans. According to the response, 72.1% replied that they dry coffee beans on wooden bed and bamboo. The rest 27.9%, replied that they dry coffee beans on the cemented floor and mesh wire.

Anwar Abasanbi (2010) reported that storage is one of the most important and crucial stages in the processing of any agricultural commodity. In case of coffee storage, the goal is to achieve and maintain its commercial value as long as possible by preserving the integrity of the bean with all its characteristics. Quality of storage place and storage time has also its own impact on quality coffee production. Based on this, 64.9% of the respondents said that they have quality storage place. The remaining 35.1% said they do not have quality storage places. Additionally, regarding storage time, 55.6% of respondents said that they store coffee for less than four months, and the remaining 44.4% said they store for more than four months. This shows that there are problems in having quality storage place and time of storing.

Coffee farmers' economic benefits

The economic benefit is one of the main objectives of every business. Management and marketing theorists underscore the importance of customer satisfaction or economic benefit for a business's success (Kotler, 2013). The economic benefit of coffee for the coffee producers is assessed through a questionnaire, FGD and document analysis. In the questionnaire, coffee-producing farmers were asked how much they benefit from coffee production. Additionally, document analysis was also performed to check how much income they get from their coffee product.

As presented in Table 8, regarding payment of regular dividend, most of the respondents comprising 49.8 % disagreed on the payment of regular dividend. The remaining 23.1% of the respondents agree; 17.1% strongly disagree and 9.9% stay neutral on the payment of regular dividends. This indicates that most cooperatives are not paying regular dividends for their members regularly. Discussions held with selected respondents also revealed that most of the respondents were not getting a regular dividend from their union due to lack of transparency in the unions. In relation to this, documents obtained from the auditor's audit report from the woreda cooperative office for the two years (2017-2019) regarding dividend payment presented in Table 9.

Respondents who agreed with the payment of dividend for the members explained that dividend payment was made annually. Among them, most agreed that dividend payment is insufficient to fulfill their livelihood requirements and use what they get for personal and family consumption.

Regarding the creation of additional income by the unions, the majority of the members (91%) of the union

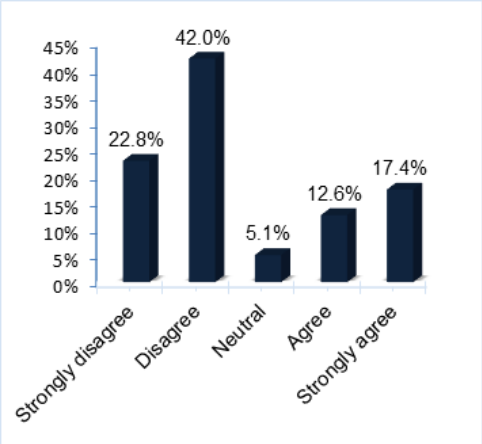

Figure 10: Opinion on the role of the unions in creating better market access among cooperative union members.

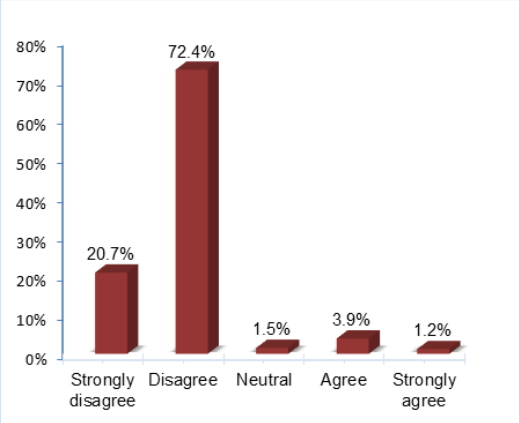

Figure 11: Opinion on cooperatives role in enhancing social infrastructure among cooperative union members.

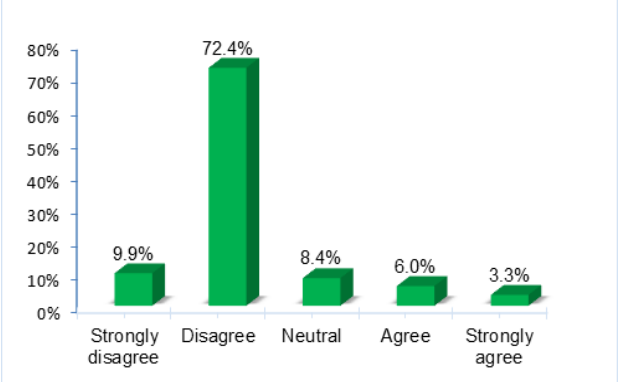

Figure 12: Members' opinions about agricultural inputs provided by cooperative unions.

responded that it is not creating additional income for them whereas, for the remaining 9% of the members their union is creating additional income. From this, it can be concluded that the union is not helping to create additional income for the union members (Figure 6 and 7).

The improvement of their living conditions can also measure economic benefit of union members. As it is indicated in Figure 8, respondents were asked if union membership improved their living conditions from a previous time. The data shows that 34.2 and 21.6% of respondents disagreed and strongly disagreed with the statement, respectively. Therefore, most respondents did not agree that union has done anything to improve their lives. Only 35.4% agreed; the rest were neutral (4.8%) and strongly agreed (3.4%).

Providing credit service for their members is one of the major tasks of primary cooperative unions. Accordingly, 39% respondents agreed; 30% strongly agreed; 19.8% disagreed; 8.4% strongly disagreed; the rest 2.7% stated neutral on the cooperatives effort to provide credit service for their members. This depicts that the unions are providing credit service for their members (Figure 9). However, FGD and document analysis showed that the unions were not providing credit service to their members. Primary cooperative unions themselves were dependent on credit provided from Kafa Forest Coffee Farmers' Cooperative Union (KFCFCU). This credit is not enough to run the cooperative unions effectively.

Adequate market access is crucial to get maximum economic benefit from farmers' products. However, the response given in Figure 10 shows that 42% disagreed and 22.8% strongly disagreed. The rest 17.4%, strongly agreed, 12.6% agreed and 5.1% were neutral on the role of their union in creating market access. This shows that better market access is not created for most farmers.

To improve the well-being of a community, unions' involvement in social welfare activities is very important but Figure 11 shows another picture. Among the respondents, 72.4% disagreed with cooperatives' participation in improving social infrastructure, while 20.7% strongly disagreed with their position. The remaining 3.9% agreed, 1.5% were neutral, while 1.2% strongly agreed. This shows that the cooperative union is not playing an important role in enhancing social infrastructures like building schools, health centers, drinking water, etc.

Providing agricultural inputs for their members is also one of the functions of the cooperatives. Damanu Tullu (2012) noted that cooperative societies can reduce the uncertainty of farm inputs supply such as quality of seeds, fertilizers, credit extension services and thereby promote economic change with this regard. In line with this argument, questions were aimed at assessing the availability of agricultural inputs among the union members. As presented in Figure 12, 72.4% of the respondents disagreed; 9.9% strongly disagreed; 8.4% stayed neutral; 6% agreed and 3.3% strongly agreed on the provision of agricultural inputs by their cooperatives. Hence, it can be concluded that most of the unions do not provide agricultural inputs to the farmers.

Challenges facing unions of coffee farmers and their members

Open-ended questions were administered to collect data regarding challenges facing quality coffee production and the economic benefit of farmers. Accordingly, the following

Table 9: Regular dividends paid from year 2017-2019 among cooperative union members

No.	*Name of the Union*	*Number of members*	*Dividend paid in Ethiopian currency (Ethiopian Birr)**		
			2009	*2010*	*2011*
1	Michiti	388	596,161	0	580,927
2	Kayakela	246	49,150	232,341	455,705
3	Kuxi	558	0	706,910	478,700
4	Diri	329	200,042	304,771	457,766
5	Charaba	223	0	0	25,470
6	Zingaj	267	0	0	294,084
7	Medfegna	211	0	121,857	0
8	Tepibuti	44	0	0	0
9	Yeyibito	220	35,211	0	236,845
10	Dakiti	41	0	5,411	0
		Average	88,056	137,129	252,949.7

*1 US$= 48 ETB

points were raised frequently as the major challenging factors during quality coffee production and marketing.

Lack of training opportunity

Creating training opportunities for cooperative members helps improve their awareness and skill in quality coffee production. As stated in ICA (2004), education and training are incorporated among the basic principles of cooperatives. However, data obtained through questionnaires and FGD shows that there is a lack of training for coffee producers.

Coffee price volatility

The production of coffee varies from year to year due to weather conditions, disease, and other factors, creating an unstable market and wide price fluctuations. This price volatility has significant consequences for those who depend on coffee for their livelihood, making it difficult for growers to forecast their income for the coming season and budget for their household and farming needs. During focus group discussion of Kuti primary coffee farmers' cooperative union members commented as follows;

Previously, most of my income was generated from coffee product sales. However, currently due to the price fall, I am not getting enough income to feed my family. Thus, I have decided to shift away from coffee production to more profitable plantations such as the khat and eucalyptus tree. By doing so, I can get more income from these plants than coffee production.

Illegal marketing

Coffee marketing takes place in a formal and informal way. Many coffee producers sell their coffee for illegal buyers for two reasons. The first one is the fact that illegal buyers pay better than cooperative unions. The second reason is that when coffee producers sell their coffee to the unions they must wait a year or more to get their dividend. Due to this many coffee farmers sell their coffee in illegal markets.

Embezzlement

As it is known, embezzlement is taking money or property for personal use that has been given on trust by others without their knowledge or permission. Contrary to this value of cooperatives, agricultural cooperatives in the study area remain victims of this malpractice. Discussion held with selected coffee-producing farmers showed that due to embezzlement with cooperatives and government officials, they are not getting the benefits they should get from their cooperative.

Lack of equal opportunities in decision making

According to ICA (2004), cooperatives are democratic organizations controlled by their members who actively participate in setting their policies and making decisions. Individuals serving as elected representatives are accountable to the membership. In primary cooperatives, members have equal voting rights (one member, one vote) and cooperatives at other levels are organized in a democratic manner. To assess whether members have equal opportunities of making decisions, the researchers evoked a question to respondents, hence, most of them forwarded that they have not been given an opportunity in decision making.

Little awareness about cooperatives

In cooperatives, it is expected that all members, management committee and paid management must be aware about the concept of cooperatives, the benefits of cooperatives, cooperative proclamation, cooperative management, membership rights and duties, and by-laws of the cooperatives. When the awareness level of members is high, it is believed that there will be good management and cooperative growth. During the focus group discussion, respondents said that members have little awareness of the concept of cooperatives, the benefits of cooperatives,

cooperative proclamation, cooperative management, membership rights and duties, and by-laws of the cooperatives, knowledge about cooperatives concepts, values and principles was little.

Conclusion

Based on the result, it can be concluded that regarding the use of farmland for coffee production, most farmers used 25% and below of their total land. This shows that farmers were using most of their farmland for the production of other crops rather than coffee. This is one of the influential factors that lead to the production of less amount of coffee and the stagnant development of cooperative unions. Regarding coffee production systems, the study findings revealed that the coffee producers properly implemented agronomic practices of coffee production and they had positive impact on the quality and quantity of coffee production. Use of quality coffee production inputs such as organic fertilizer (compost), pruning and other effective weed control mechanisms showed the production of quality coffee by farmers.

Harvest and post-harvest practices such as harvesting coffee at full maturity stage, applying effective coffee harvesting mechanisms, having quality coffee drying and storing places except storage duration resulted in the production of quality coffee by the farmers. According to activities of cooperatives, they are not playing an encouraging role in economic benefit for coffee farmers. One sign of economic benefit is the payment of regular dividend. However, as it was understood from the study, most farmers were not getting a regular dividend from their unions. It is also understood from the study that cooperatives did not effectively provide services like financial loan, batter market access, social infrastructure and agricultural inputs for their members. Challenges like lack of training opportunities, coffee price volatility, illegal marketing and embezzlement were the major challenges to the production of quality coffee and affecting farmers economic benefit.

Based on these results, recommendations can be made for future improvement of challenges facing quality coffee production and the economic benefit of farmers in Gimbo woreda. Concerning bodies like cooperatives, NGOs and government need to support them to use their land to produce a large amount of coffee. Farmers are not getting regular dividends appropriately. Thus, the primary cooperative unions need to work hard for the benefit of their members. Most coffee farmers sell dried coffee to their union. However, wet-processed coffee has better market price than dried one. Thus, coffee-producing farmers need to get training to produce economically important coffee. Primary cooperatives are not providing services for their members effectively. Thus, the work of cooperatives needs to be evaluated periodically. The government and other stakeholders should work on stabilizing the market price. Financial organizations such as banks and microfinance institutions should work in collaboration with the government to provide adequate loan to cooperative associations. Wild coffee forest ecosystem conservation should be given priority in order to safeguard the existing production trend for the future. Further research should be undertaken to generate achievable policy strategies and development targets regarding climate variability's effect on coffee productivity. There is a need for more studies at the local level to allow further assessment of local dimensions of the subject. A further study could assess the long-term and wider range effect and such studies could help design better strategies and policy instruments in the coffee production sector.

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