

## **Marketing Supply Chain Channels of Primary Coffee Co-Operatives in Ethiopia, East African Region-Empirical Study**

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### **Introduction**

Ethiopia is located in East African Region and endowed with agricultural resources due to its geo-agro location. It follows that Kaffa area is the origin of coffee in Ethiopia and the inhabitants of Kaffa are believed to have discovered the value of coffee as a stimulating beverage. The major coffee producing areas in Ethiopia are Kaffa, Illubabor, Wellega, Sidamo, Yirgacheffe and Hararghe. According to the coffee map, the country's 55% coffee coverage is classified as forest and semi-forest coffee, 40% as garden coffee, and 5% as plantation coffee (Abera, 2005). Ethiopian coffee production shows an increasing trend, where the average share of Ethiopian coffee in the world market was 4.4% during the period 1982-2001 (Dejene and Tefere, 2002). Similarly, the volume of coffee export had increased from 69,999 metric ton (MT) in 1985/86, to 161,100 MT in 2004-2005 (NBE, 2004).

The Productivity of smallholder agriculture lingers at subsistence level, primarily due to the unreliable supply and unaffordable prices of farm inputs, and poor rural marketing infrastructure. Consequently, rural income remains low and poverty become visibly large. Co-operatives are indispensable institutions for addressing such a structural problem (Tesfaye, 2004). In Ethiopia, co-operatives had failed in the past because of some predictable and controllable factors.

The Derg regime established co-operatives in a hurry without sufficient preparation and feasibility study. The regime violated the very basic principle of co-operation (open and voluntary membership). Farmers were forced both directly and indirectly to join co-operatives without their interest. In addition, the regime had intervened in their internal affairs and used them for its own political ends (Tesfaye, 1995).

Currently the development of primary co-operatives in the country is showing a promising progress. In 2004 - 2005, there were 14,423 primary co-operatives across the country operating in different sectors of the economy. They had 4,983,752 members and 474,009,157 birr capitals (FCC, 2005a). Their number almost doubled in 2002 - 2003. There were 7,740 primary co-operatives in 2002 - 2003 and out of these 4,183 were agricultural co-operatives (FCC, 2004a).

Primary co-operatives are the closest to communities and organized on a shareholder basis, formed by individual farmers voluntarily working in a specific geographic area. Primary level coffee co-operatives provide a collection point for the farmers' cherry, maintain quality control, undertake pulping and washing of the coffee, and provide transportation services to the union (ACDI/VOCA, 2003b).

Government support to agricultural co-operatives is essential for their diversification, expansion, sustainability, and above all, to protect the interest of the people with limited means. Liberalization doesn't prohibit this support. In fact, the World Bank and UN specialized agencies emphasize government support for the co-operatives development without impairing their co-operative character in any way i.e. governments have to be committed for the support by accepting the declaration of Sydney conference of Ministers of Co-operation of Asia and Pacific Countries, organized by ICA (Dwivendi, 1996).

The development of farmers' co-operatives can make a significant contribution to the improvements that are urgently required in agricultural production. Farmers' co-operatives can provide services such as input-supply, out-put marketing and value addition (processing) to agricultural produces (Abduganiyev, 2005).

Primary co-operatives are undertaking the similar activities join together to establish unions. Thus Farmer co-operative unions (FCU) are established by two or more primary co-operatives at the meso-level. The FCU are administered by a general assembly elected by members who delegate tasks and power to committee. Farmers coffee unions are formed to give warehouse services, directly export coffee on behalf of members (ACDI/VOCA, 2003b).

In the 1990's, due to coffee crisis, co-operatives lost about birr 33,897,053 i.e. about 15 (out of 114) primary coffee co-operatives were bankrupt and forced out of the coffee business; 25 (out of 182) coffee processing pulverizes ceased functioning; almost all dry coffee hulleriers were out of the business; Thousands of permanent and temporary employees become unemployed; and yet, banks could not recover investment loans. At the national level, the crisis had several economic impacts. Economically, the crisis resulted in a decline of volume of coffee export and hence, a decline in foreign exchange earnings. The country lost about 840 million US dollars during 1998 - 2002 (Abera, 2005).

The situation is that small scale coffee farmers are receiving below 1% share of the coffee export price; whereas the top five coffee roaster companies are making a lot of profit. These top five coffee roasters companies namely Nestle, Sare Lee, kraft, Procter and Gamble and Tchibo, control more than 40% of the world coffee market (Oxfam, 2002a).

The fair trade market was introduced at a global level through the launching of the "Make Trade Faire" campaign in 2002 by Oxfam international and its partners. It was triggered by the coffee crisis that devastated more than 25 million coffee farmers all over the world, exposing them to abject poverty as most of them could not afford to provide their family with food, health and education service. The fair trade market was set up to guarantee farmers a fair price, which covers cost of production and enables them to lead a sustainable livelihood (Oxfam, 2002b).

In a country like Ethiopia, where the livelihood of the majority of the population depends on agricultural output at subsistence level, marketing institutions are of greater importance for providing facilities for marketing at a reasonable price for the sustainable livelihood of the farmers.

## 1.2 Statement of the Research Problem

The origin of coffee is said to be emanated from Ethiopia, East African Region. It is Africa's leading producer and exporter of Arabica coffee, one of the finest brands on the world market. Coffee is organically produced and grown under trees, and consequently it has also the valuable distinction of conserving indigenous forests (Oxfam, 2002a).

Some researches show that coffee productivity is improving in most of the coffee growing areas. Average production of coffee at the national, is about 828kg/Ha and this is a bit high as compared to Kenya which has an estimated yield of 503.5kg/Ha (Andrew, 2006).

One of the major objectives of agricultural co-operatives is to closely relate the seasonal and geographical price variation. Reducing seasonal variability in food grain price is possible if the marketing system has the capacity to store products and distribute supplies as evenly as possible from one harvest to another (Bulti, 1986).

In the past, co-operatives were heavily criticized for being inefficient, discriminatory against the poor and women and institutions rife with corruption. Their record of success and sustainability varies across countries and sectors. As late as 1993, a World Bank review of co-operatives concluded that they were not viable organizations due to inappropriate policy frameworks, excessive government interference and insufficient farmer capacity building (Rondot, 2004).

Under the current leadership, agricultural co-operatives have remained at the core of Ethiopia's rural development policy. However, their focus has been re-oriented towards the free-market system and export orientation. To some extent, however, the misuse of co-operatives as a means of coercion and urban biased development under the former regime has created a level of mistrust among rural communities which remain tenacious, even now (Sam, 2005).

In the view of this rapidly changing political economy, co-operatives were forced to re-examine themselves, revamp, re-engineering, remodel, and establish their relevance as rural institutions. They were contending with new challenges such as competition from the private sector, declining government support, and an overall unsupportive domestic and international policy environment (Nippier, 2004).

The 'modern' co-operative was encouraged to improve accountability through democratic, transparent structures and reinvent themselves into market-oriented and consistently profitable institution (Lyon 2003; Bingen 2003; Nippier 2004).

Liberalization brought with it, withdrawal of government involvement in co-operatives and a series of reforms, which culminated in the new Co-operatives act of 1998. By this act, the government gave up its policy making jurisdiction over the economic activities of co-operatives. Thereafter, payments to growers plummeted amid growing political opportunism at the grassroots level that damaged farmer morale and raised the level of misuse of co-operative capital and mismanagement in co-operative administration (Andrew, 2006).

In most of the co-operatives, farmers claimed that, the amount they actually receive through dividend payment is very low and some time null, as majority of the profits are still being used to service commercial debts. As a consequence of the debt crisis, many of the co-operatives are unable to secure sufficient funds to purchase coffee during the harvesting season and also face difficulty in retaining members and attracting new ones.

With the liberalization of the coffee sector, a number of exporters have entered the coffee market with a limited amount of annual coffee production; as a result, since their milling

capacity is underutilized and they need to cover the processing costs, exporters are more concerned with quantity than with quality (Abdoul karim, 20003).

Since most farmers sell their coffee to local traders when they are in urgent cash need (distress sales) to smooth out consumption gap, which favor the current pricing mechanism as a pooling system, which is based on similar prices regardless of the coffee quality. The mechanism doesn't encourage farmers to consider quality into account in their daily coffee activities. Without price incentives for quality, farmers tend to mix light and heavy coffee cherries, dried and wet parchment coffee, therefore, leading to low quality.

Amongst the main tasks of co-operatives is to process the collected coffee from members. As the free market economic reform paves the way to institutional linkage which supported co-operatives regarding quality improvement and control. However, statistical data show that the co-operatives are not getting what they were supposed to get and some of the co-operatives left the market for sometime, being bankrupted because of too much corruption in the coffee inspection and grading center (GZCPO, 2006).

Fair-trade certificates are granted to primary co-operatives, not to unions. The numbers of certified co-operatives are still few, at only 5 of 23 primary co-operatives of the Yirgacheffe Farmer co-operative union (YCFUCU), as of May 2006. In 2005, the shipment of Fair-trade coffee was estimated to be about 2% of the total national export. Most of Ethiopian coffee is organic, and a fee for the organic certificate is required to export coffee as organic. For organic certification, there are few restrictions for applicants. Either individuals or organizations can apply for the certificate because the certification requires agronomic conditions, rather than social, in contrast to Fair-trade (Jetro, 2007).

The export volume of Ethiopian organic coffee is the second largest in the world next to that of Peru. In 2005, Ethiopia shipped about 9,000 tons, which was 19% of the world organic coffee export and 6% of the total Ethiopian coffee export volume (ICO, 2005).

The coffee co-operative unions were established and strengthened to buy, consolidate, and market internationally small holder supplied coffee. In the supply chain, they are the leader firms in the local value chain. The process of building the capacity of unions was an important fact of vertically linking co-operatives and exporters to the unions in the value chain (Vertical Integration) (ACDI/VOCA, 2005).

In practice, co-operative achievements are assessed by increased household incomes and the extent of local economic and business development. Success is measured by efficiency and performance indicators such as training and membership growth, profit and dividend payments, services provided to members, and sale and purchase of products (Zeuli, 1998).

In general, the attribute of a well performing coffee marketing are reflected in generating and transmitting prices that reflect the true measure of all relevant factors; determining the real value of the product such as quality and weight; the integration of market; and effectiveness of the government price policies; the attainment of optimum standard in the prevailing operational procedures; the improvement in production and marketing system (Admasu, 1998).

It has a greater importance, to check from time to time, whether these primary co-operatives are performing well. This contributes to the understanding of factors hindering improvement and modernization of the primary coffee co-operatives. This would enable the co-operatives to check whether they are on the right track so that measure to be taken to correct any undesirable course of development. To create good performing primary co-operatives, it is essential to assess the performance of the already existing ones and draw practical lesson on the

critical operational problems and constraints. That is why the present study deals with performance analysis focusing on Supply Chain Channel Management, their marketing condition and identifying those factors influencing coffee marketing through primary co-operatives.

### 1.3 Objectives of the Study

The objectives of this study are as follows:

1. To identify and describe the coffee marketing channels in the study area.
2. To estimate the level of marketing margins for different market participants.
3. To assess the Supply Chain Channel Management of the coffee producers co-operatives.
4. To examine factors that influence farmers' decision on the marketing of their coffee through the co-operatives

### 1.4 Importance of the Study

In a country in which the majority of the people derive their income from agriculture, and under the umbrella of agricultural development lead industrialization (ADLI) a well established Agri-marketing system has a paramount importance for the development of the sector and in this study, evaluating the marketing performance is useful for management bodies of primary coffee co-operatives and other co-operatives working under similar scenario in the region to improve their performance through appropriate and relevant measures. It is also important for governmental institutions which are entitled in establishing and organizing the co-operative at a regional level. The study was conducted in the area in which coffee production is their main stay and it evaluates whether the marketing performance has brought a change in the livelihood of the members and evaluating the performance helps to prepare a further strategy to develop the institutional arrangement and improve farmers' economic position.

### 1.5. Scope and Limitation of the Study

The study concentrates mainly in identifying and describing the coffee marketing channels in the study area and evaluating the marketing margin of participants under co-operatives marketing channels. Further the study focuses mainly on the factors affecting marketing of coffee through co-operatives by individual members. Due to insufficient of secondary data and information from some of the co-operatives the study was unable to evaluate co-operatives market integration along the central market. However, the stated limitation did not affect the quality and outcome of the study.

### Operationalization of marketing concepts

Kohl (1966) has referred "the performance of all business activities involved in the flow of goods and services from the point of production to point of ultimate consumer. Marketing in its simplest form is the process of satisfying human needs by bringing products to people in the proper form, time and place. Marketing has economic value because it gives form, time, and place utility to products and services (Branson *et al*, 1983).

Marketing is the process of planning and executing the formation of, pricing, promotion and distribution of ideas, goods, and services to create exchanges that satisfy individual and organizational objectives (Richard *et al*, 1998).

### **Marketing channels**

It is a business structure of interdependent organizations that reach from the point of product origin to the consumer with the purpose of moving products to their final consumption destination (Kotler and Armstrong, 2003). Abbot (1958) also defines marketing channel as the sequence of intermediaries through which goods pass from producer to consumer. This channel may be short or long depending on the kind and quality of the product marketed, available marketing services, and prevailing social and physical environment (Islam *et al.*, 2001).

The analysis of marketing channels is intended to provide a systematic knowledge of the flow of the goods and services from their origin (producer) to their final destination (consumer). This knowledge is acquired by studying the participants in the process, i.e. those who perform physical marketing functions in order to obtain economic benefits (Getachew, 2002).

### **Marketing efficiency**

The term marketing efficiency refers to the efficient allocation of resources to achieve the greatest possible consumer satisfaction. Some factors that affect the efficiency of markets are market control, externalities, and information. Market control at its turn refers to structure, conduct and performance issues, while externalities relate to the non-market price incorporated costs and benefits and imperfect information to the access to and availability of market information such as price, supply, demand and quality information (Raymon, 2003).

### **Marketing system**

Marketing system may be defined as the totality of product channels, market participants and business activities involved in the physical and economic transfer of goods and services from producers to consumers. Marketing system operates through a set of intermediaries performing useful commercial functions in the chain formations, all the way from the producer side to the final side of consumers (Islam, 2001). More concisely, marketing system is a collection of channels, middlemen and business activities, which facilitate the physical distribution, and economic exchange of goods (Kohls and Joseph, 1985).

### **Farmers' co-operative union**

The Farmers' co-operative unions (FCU) are formed, by two or more primary co-operatives to undertake those activities and functions that are not economically and physically undertaken by the primary co-operatives. The owners of FCU are individual farmers who formed primary co-operative. Farmers' co-operative unions are managed by general assembly whose members represented from primary co-operatives. The general assembly delegates its power to democratically elected management committee, control committee and others. The manager and other staffs to be employed by the unions undertake the day to day activities (Fredrick, 1997).

### **Fair trade coffee**

Fair Trade is an alternative approach to conventional trade aimed at improving the livelihoods and well-being of small producers by improving farmers access to market, strengthening farmers organizations, paying a fair price, and providing continuity in trading relationships. Fair trade coffee is purchased directly from co-operatives of small farmers and guaranteed a

minimum contract price to farmers. This minimum price is the most known feature of fair trade, but there are also other most important features. Fair trade seeks to establish interactive trading partnerships that are based on dialogue and transparency. Buyers are expected to provide at least partial short-term trade financing when necessary and producers are expected to invest at least some of their income in democratically agreed-upon goals for long-term sustainability such as community education, healthcare, or infrastructure development. Fair trade is built on the concept of developing mutually beneficial long-term relationships that go beyond the unrevealed and often tenuous economic exchange of cash for coffee (Daniele and Koekoek, 2003).

### **Organic coffee**

Organic farming aims to balance and optimize agriculture with the environment. Organic agriculture has traditionally been a systemic approach to agriculture and animal husbandry. It recognizes productive or economic functions practiced in close interdependence with a much larger eco-system. Organic products are produced without application of synthetic chemicals. Although it is only one part of organic agriculture, the synthetic free aspect is the most generally familiar component. Moreover, even coffee industry members mistakenly believe that the only difference between a certified organic coffee and a coffee grown in the rustic tradition without agrochemicals is the cost of the certification. In fact, certified organic agriculture is much more proactive and requires a farmer to do more than refrain from the use of synthetic agrochemicals (Daniele and Koekoek, 2003).

### **Eco-Friendly coffee**

Coffee that can truly be identified as either eco-friendly or grown under shade requires partly certification and verification of coffee production standards that have been designed and to preserve bio-diversity. The standards are set for soil management, minimum tree density, a minimum variety of native species, strict agrochemical and waste management and standards for good working conditions and the fair treatment of farm workers. One of the two primary certifiers is Rainforest Alliance. Good working condition and treatment of worker require that employers provide: the following namely decent housing, sanitary facilities, potable water, and electricity when possible, safe cooking facilities, at least the legal minimum fair pay, access to medical care, and the availability of schooling (Daniele and Koekoek, 2003).

### **Linkage between Organic and fair trade coffee**

Organic and Fair Trade Coffee is another premium type of coffee under the specialty market. It has the smallest market share, coffee production under this category needs both organic and fair trade certification i.e. double certification and fetches a better premium price than the other type of coffees.

### **Structure, conduct and performance model (SCP)**

This model examines the causal relationships existing between market structure, conduct, and performance, and is usually referred to as the structure, conduct, performance model (SCP). In agricultural economics, the most frequently used model for evaluating market performance is based on the industrial organization model. Wolday (1994) also used this model to evaluate food

grain market in Alaba Siraro district. The present study used SCP model to evaluate co-operative marketing system too.

### **Conceptualization and Application of concentration Ratio, Marketing Margin and Econometric Models**

#### **Concentration ratio (CR)**

The concentration ratio is a way of measuring the concentration of market share held by particular suppliers in a market. "It is the percentage of total market sales accounted for by a given number of leading firms". Thus, a four-firm concentration ratio is the total market share of the four firms with the largest market shares. The greater degree of concentration is the greater the possibility of non-competitive behavior existing in the market. For an efficient market, there should be sufficient number of firms (buyers and sellers).

$$C = \sum_{i=1}^n S_i \quad i = 1, 2, 3, 4, \dots, m$$

Where  $S_i$  represents market share of  $i^{\text{th}}$  firm and  $m$  is number of largest firms for which the ratio is going to be worked out to measure the concentration of Market shares.

#### **Marketing margin**

Computing the total gross marketing margin (TGMM) is always related to the final price paid by the end buyer and is expressed as percentage (Mendoza, 1995).

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$$\text{TGMM} = \frac{\text{End buyer price} - \text{First seller price}}{\text{End buyer price}} \times 100$$

End buyer price

Where, TGMM = Total gross marketing margin

It is useful to introduce the idea of 'farmer's portion', or 'producer's gross margin' (GMMp) which is the share of the price paid by the consumer that goes to the producer. The producer's margin is calculated as:

$$\text{GMMp} = \frac{\text{End buyer price} - \text{marketing gross margin}}{\text{End buyer price}} \times 100$$

End buyer price

Where, GMMp = the producer's share in consumer price

The net marketing margin (NMM) is the percentage of the final price earned by the intermediaries as their net income after their marketing costs are deducted.

The percentages of the net income that can be classified as profit (i.e. return on capital), depends on the extension to such factors as the intermediaries' own (working capital) costs.

$$\text{NMM} = \frac{\text{Gross margin} - \text{Marketing costs} \times 100}{\text{End buyer price}}$$

Where, NMM = Net marketing margin

### (i) Econometric models

The study of marketing of coffee through the co-operatives based up on dichotomous regression models. This study attempted to explain whether co-operative members use the co-operatives as marketing agents and to what extent members market their coffee through co-operatives. The knowledge that, a farmer is marketing his coffee through the co-operative may not provide much information about the quantity of coffee he/she marketed through the co-operative. A strictly dichotomous variable often is not sufficient for examining the intensity of usage for such problems. There is also a broad class of models that have both discrete and continuous parts. One important model in this category is the Tobit model. Tobit model is an extension of the Probit Model and it deals with the problem of censored data (Johnston and Dinardo, 1997). Some authors call such models Limited Dependent Variable Models because of the restriction put on the values taken by the regressand (Gujarati, 1995).

#### 2.1. Factors affecting the marketing of coffee through the co-operative

The Tobit model applied for analyzing factors influencing the marketing of coffee through the co-operatives is presented below. The model was chosen because of its advantage over other discrete models (Logistic and Probit) in that; it reveals both the probability of marketing through the co-operative and the intensity of marketing operations.

Following Maddala (1992), Johnston and Dinardo (1997) and Green (2000), the Tobit model can be defined as:

$$Y_i^* = \beta_0 + \sum_{i=1, 2, \dots} \beta_i X_i + U_i$$

$$Y_i = Y_i^* \text{ if } Y_i^* > 0$$

$$Y_i = 0 \text{ if } Y_i^* < 0$$

Where,

$Y_i$  = the observed dependent variable, in this case a quintal of coffee marketed through the co-operative

$Y_i^*$  = the latent variable which is not observable

$X_i$  = vector of factors influencing the marketing of coffee through the co-operative

$\beta_i$  = vector of unknown parameters

$U_i$  = residuals that are independently and normally distributed with mean zero and a common variance  $\delta^2$

Note that the threshold value in the above model is zero. This is not a very restrictive assumption, because the threshold value can be set to zero or assumed to be other value (Green, 2000).

The model parameters are estimated by maximizing the Likelihood Function of the following form (Maddala, 1997).

$$L = \prod_{Y_i > 0} \frac{1}{\sigma} f\left(\frac{Y_i - \beta_i X_i}{\sigma}\right) \prod_{Y_i \leq 0} \left[1 - F\left(\frac{-\beta_i X_i}{\sigma}\right)\right]$$

Where  $f$  and  $F$  are respectively, the density function and cumulative distribution function of  $Y_i^*$ ,  $\prod_{Y_i^* > 0}$  means the product over those  $i$  for which  $Y_i^* > 0$ , and  $\prod_{Y_i^* \leq 0}$  means the product over those  $i$  for which  $Y_i \leq 0$ .

As cited in, Moffet and Macdonald, (1980) proposed the following techniques to decompose the effects of explanatory variables into usage and intensity effects. Thus, a change in  $X$  (explanatory variables) has two effects. It affects the conditional mean of  $Y_i^*$  in the positive part of the distribution, and it affects the probability that the observation will fall in that part of the distribution. Consequently a similar approach is used in the present study.

1. The marginal effect of an explanatory variable on the expected value of the dependent

Variable is:

$$\frac{\partial E(Y_i)}{\partial (X_i)} = F(z) \beta_i$$

Where,  $\frac{\beta_i X_i}{\sigma}$  is denoted by  $z$ ,

2. The change in the probability of marketing of co-operatives as an independent variable  $X_i$  changes is:

$$\frac{\partial F(z)}{\partial (X_i)} = f(z) \frac{\beta_i}{\sigma}$$

3. The change in marketing intensity with respect to a change in an explanatory variable

$$\frac{\partial E\left(\frac{Y}{Y^* \phi 0}\right)}{\partial (X_i)} = \beta_i \left[ \frac{f(z)}{F(z)} - \left(\frac{f(z)}{F(z)}\right)^2 \right]$$

Where,  $F(z)$  is the cumulative normal distribution of  $z$ ,  $f(z)$  is the value of the derivative of the normal curve at a given point (i.e., unit normal density),  $z$  is the  $z$  score for the area under normal curve,  $\beta_i$  is a vector of Tobit maximum likelihood (ML) estimates and  $\sigma$  is the standard error of the error term.

**Identification of Dependent variable**

In this study, the total quantity of coffee marketed by individual member households through the co-operative was taken as the dependent variable.

**Identification of Independent variables**

Co-operative marketing performance is hypothesized to be influenced by a combined effect of various factors, such as household characteristics, socio-economic characteristics, and other institutional characteristics.

**Education level:** It is a continuous variable and refers to the number of years of formal schooling the farmer attended and attained. The higher the education level, the better would be the knowledge of the farmer towards the co-operative and acquire news, information and education about the benefits of the co-operative easily (Kraenzle, 1989; Klien et al., 1997). Hence, those farmers with higher formal education are in a better position to know the benefits of co-operative, better enlightened and are more likely to market their coffee through the co-operative organization. Hence this variable is expected to influence the marketing of coffee through the co-operatives positively.

**Number of years of membership:** This variable is a continuous variable and it refers to the number of years since the farmer has been the member of the co-operative organization. Farmers having longer years of membership are in a better position to know the accrued benefits of the co-operative than farmers with shorter years of membership (Cain et al., 1989). In this study, this variable is hypothesized to influence the marketing of coffee through the co-operative positively.

**Management Position in the co-operative:** It is a dummy variable taking a value 1 if the farmer has a position in the management (board of director) or employment in the co-operative and 0 if he is ordinary member. Having a position in the co-operative increases the attachment of the farmer to the co-operative than the ordinary member and help to realize the benefits of the co-operative. Thus, their usage of the co-operative as marketing agent is better than the ordinary member. Therefore, having a management position in the co-operative is expected to influence the marketing of coffee through the co-operative positively.

**Farm size:** This variable is a continuous variable and it refers to the total area of farmland that a farmer owns in hectare. The usage of the co-operative as marketing agent requires substantial economic resources of which land is the principal one (Wadsworth, 1991; Klein et al.1997). It is assumed that the larger the total area of the farmland the farmer owns, the higher would be the output. Farmers with higher level of output expected to market through the co-operative than those who have not. Therefore, it is expected that this variable would have positive influence on the marketing of coffee through the co-operative.

**Production of coffee:** This is a continuous variable and refers to the amount of coffee the farmer obtained measured in quintal. It is assumed that the marketing of coffee by the farmer is positively related to the amount of output they get. The higher the output the farmer obtained, the higher would be the amount marketed through the co-operative. Therefore, this variable is expected to influence the marketing of coffee through the co-operative positively.

**Perception of farmer about price offered by co-operatives:** This is a dummy variable taking a value 1 if the co-operative offered for the farmer's coffee a price similar or better than other marketing agents in the area and, 0 otherwise. The price effect is one form of co-operative effect that the co-operative passes on the farmer's economy (Chukwu, 1990). In areas where the coffee market has some what an oligopolistic behavior, pricing techniques are one of the most marketing strategy in order to capture more of the market share. Therefore, if the co-operative charge competitive price for coffee in the area, the farmers market their coffee through the co-operative (Wilkins and Stafford, 1982; Fulton and Adamowicz, 1993; Misra et al., 1993; Klein et al., 1997). Therefore, co-operative price influence the marketing of coffee through the co-operative positively.

**Availability of other marketing agents which offer competitive price:** This is a dummy variable taking a value 1 if there are other marketing agents in the area at a distance less than to the co-operative purchasing center and doing similar activity (purchasing coffee), 0, otherwise. Farmers will get alternative market outlet to sell their coffee if there are other marketing agents in their area. Co-operatives face market competition if there are other marketing agents in the area of the farmer performing similar activity with them (Bishop and McCone, 1999). Therefore, this variable is expected to influence the marketing of coffee through the co-operative negatively.

**Availability of other supporting services by the co-operatives:** This is a dummy variable taking a value 1 if the farmer gets other services from the co-operative besides supplying inputs, purchasing farm products and extending credit, 0 otherwise. Farmers' usage and connection with the co-operative increases if they are beneficiary from different services it extends (Wilkins and Stafford, 1982; Black and Knutson, 1985; Misra et al., 1993; Fulton and Adamowicz, 1993; Klein et al., 1997). Other services considered include milling service and educational training. Therefore, this variable is expected to influence the marketing of coffee through the co-operative positively.

**Distance of the farmer's residence from the market places:** It is a continuous variable measured in hours. It refers to the distance of the farmer residence from the market places, where co-operatives and traders are buying coffee from farmers. The proximity of the market places from the farmer residence reduces the cost of time and labor that the farmer spent in searching for a buyer for his coffee and mainly will not be exposed to illegal traders. Illegal traders are those traders who operate with out being licensed. The other advantage is that as the farmer is close (near) to marketing centers, they will have more knowledge about the market condition, behaviour and its benefits. Therefore, in this study, the distance of farmer residence from the market places is expected to influence the marketing of coffee through the co-operative negatively.

**Non-farm income:** It is a continuous variable. It refers to part of the total amount of income measured in birr (Ethiopian Currency) that is earned from activities, which are not related to agriculture. The study hypothesized that if the earning from the non-farm income is higher than the coffee production mostly the farmers will shift towards the non-farm income activities. Therefore, in this study, non-farm income is expected to influence the marketing of coffee through the co-operative negatively.

**Patronage refund:** It is a continuous explanatory variable and refers to the amount of money the farmer receives (dividend) from the profit of the co-operative in proportion with his/her use of the co-operative (patronage). It is assumed that farmers will be encouraged to market more of his coffee through the co-operative if there is surplus appropriation in the form of patronage refund (Black and Knutson, 1985; Fulton and Adamowicz, 1993). Thus, patronage refund assumed to influence the marketing of coffee through the co-operative positively.

## **Understanding the Structure and Conduct of Coffee Market**

**The Structure and conduct of Coffee market can be understood in terms of namely Viz:**

### **1. Coffee marketing participants, their roles and linkages**

In the present study, different coffee market participants were identified. The Market participants in the study areas include the following namely, Producers/farmers, Primary co-operatives, assemblers, suppliers, illegal traders, brokers, transporters, farmer co-operative union, and exporters.

### **2. Buyers and sellers**

There are various buyers and sellers involved in coffee marketing system. In coffee marketing processors, warehouse keepers, transporters, cleaners and graders, etc. whose services in the traditional marketing system has been more essential for facilitating the marketing of coffee. Their presence in the marketing system has an important bearing not only on the cost of marketing but also on the price paid by buyers and received by producers. Various types of buyers and sellers are operating at each level of the marketing system, and their role in the coffee trade are discussed in the present research study.

### **3. Farmers:**

These are the root of market participant in the coffee markets. Most of the farmers own a small piece of land and high labor land ratio and these farmers have no influence on coffee market and prices. However, as a result of small land holding, farmers diversify and coffee is the only source of income. Those co-operative members who have a farm size ranging from 0.25 to 1.5 hectare account for 82.5% of the sample farmers. There are some farmers who have relatively larger land holding and these farmers are better off. These farmers usually sell their coffee on contract either to traders or via co-operative Organization. They sell their coffee while waiting for better price through out the year. These farmers are those who smooth their consumption by diversifying their production and also involved in some kind of non farm activities. Those co-operative members who have a farm size ranging from 1.6 to 5 hectare account only for 17.5 % of the sample farmers.

### **4. Primary Co-operatives:**

Co-operatives are involved in the marketing of coffee. They are established by voluntary farmers for collectively marketing their coffee. Co-operatives provide their members with the following services, namely:

- It enables members to access profitable market and reduces marketing costs.

- Assembling supplies and increase bargaining power in the market.
- It promotes better methods of production, processing and marketing of their produce.

Co-operatives are effective means for improving the marketing system through a reduction in marketing costs and collective marketing approach. Primary co-operatives can play a crucial role in the overall reshaping the structure of coffee marketing system.

#### **5. Illegal traders:**

These are unlicensed traders that operate in all, the activity of the coffee market. They buy unripe cherries from the farmers in the villages. Mostly, they operate in the afternoon and evening time since the licensed traders and security officials are not present during those times. They undertake the purchasing of coffee at their destination putting a scale in their house rather than at the market place. Most illegal traders are either jobless or farmers who have very small plot of land. However, the illegal traders operate in areas which are too far from both co-operative and licensed traders. They pay farmers a very low price, as the illegal traders are the only buyers in those areas. In such areas, farmers have no option rather than selling their coffee to illegal traders. The woreda Agricultural and Rural Development office fixed the number of traders operating in a certain place in order to control coffee supply. But most of the suppliers use these illegal traders along with the licensed trader in order to collect more coffee.

#### **6. Assemblers:**

These are called 'sebsaby'. They are licensed traders to buy coffee in small quantity from the farmers. They either directly procure from the farmers by going to his home or operate at open market, particularly near road sides and sell to suppliers. They may purchase with their own money or for the suppliers through commissions.

#### **7. Suppliers:**

These are also called 'Akrabi'. They are licensed traders and buying coffee either from farmers through hired employees in small quantity or directly from assemblers in large quantities. The sort of contracts they encountered with the local dealers ensures them a continuous flow of supplies to the market and they have a better understanding of market prospect since they have direct contact with exporters. The suppliers are few in number and the degree of competition at the local level is not strong (tough) and offer low prices and able to affect farmers income.

#### **8. Co-operative union:**

Farmer co-operative union is established by primary co-operatives. Co-operative union is formed to purchase coffee from farmers at a reasonable price and members accrue benefit from the export market. Co-operative union purchases coffee from the primary co-operatives. The co-operative union is granted special permission to directly export the coffee without passing through auction.

### **9.Exporters:**

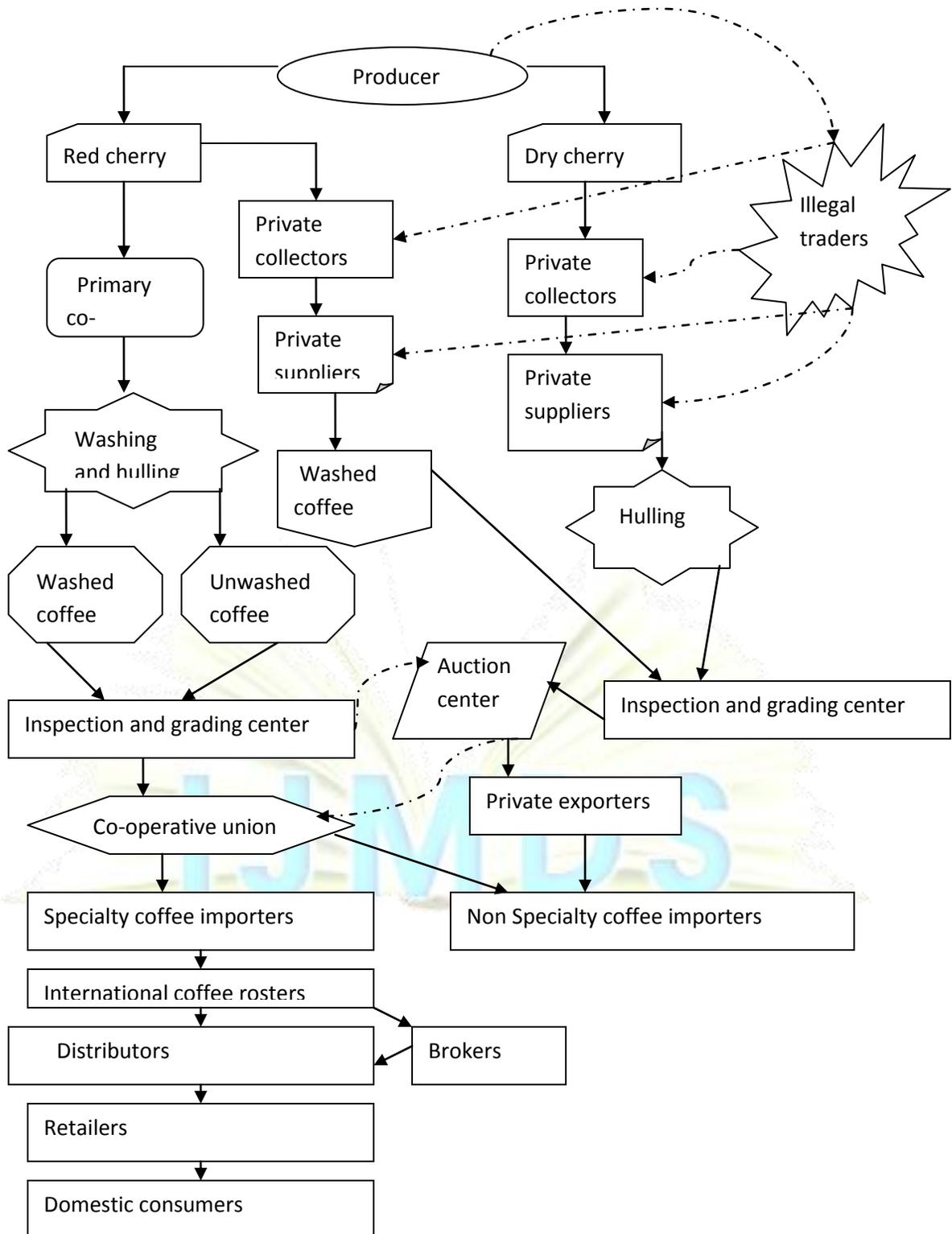
Exporters are licensed people who operate with a large amount of capital, and responsible for coffee export. Coffee suppliers sell coffee to exporters through auction market. Coffee exporters perform functions such as processing, sorting and grading. Co-operative union has capital shortage. Under such situation exporters procure coffee from co-operative union through auction market.

### **Marketing channels**

The coffee commodity chain is highly complex, with a coffee bean changing hands up to an estimated 150 times between the producer and the consumer (Milford 2004). Farmers sell red cherry either for co-operatives or assemblers for wet processing because this results in higher quality coffee and fetches a better price. Mostly, the buying season of the red cherry range from October to January. Some times the co-operatives operate in the first three months due to lack of capital to procure the red cherry. In contrast to the co-operatives, the assemblers buy coffee through out the selling season. Since most of the farmers have financial difficulties in order to pave way for smooth consumption they convert the red cherry into dry cherry and sell when they are in need of cash at any time in the year, waiting until the price gets high.

Based on the sample survey, the dominant purchasers of redchery in the 2006/07 were the assemblers. Table below reveals that 0.83% and 1.66% of the co-operative members in Wonago and Yirgacheffe woreda, respectively, sell their coffee only for the co-operatives and 2.5% and 4.16% of the co-operative members in Wonago and Yirgacheffe woreda, respectively, sell their coffee only for assemblers and illegal traders. 96.66% and 94.16% in Wonago and Yirgacheffe woreda, respectively, sell their coffee to both co-operatives and private traders.





## **Conduct Behavior of coffee market**

Market conduct refers to the behaviors that firms pursue in adopting or adjusting the market in which they sell or buy. The major aspects according to Scarborough and Kydd (1992) include pricing and selling policies and tactics, overt and tacit inter-firm co-operation, or rivalry, and research and development activities.

### **2.2. Co-operatives price setting strategy**

According to Admasu (1998), timely and reliable information is a widely accepted service in terms of economic efficiency and market performance. The marketing system requires information on the most recent prices of coffee both at the auction level and international coffee markets. The daily market price disseminated by the government radio every morning is the main source of price information though it is not applicable in the local coffee market and it only serves as a “**point of reference**”. The coffee producers get price information of different market through personal communication. The survey results indicate that, all of the co-operatives got price information from the co-operative union which is found in Addis Ababa through telephone before they started procurement. However, in addition to the union the government broadcast average auction market price information held on the previous day for both washed and unwashed coffee. Most of the time, the co-operatives declared its purchasing price by following the licensed trader’s (assemblers) price in a 10 to 20 cents difference.

Sometimes the co-operative change the daily buying price two or three times a day and at those moments they used mobile phones to disseminate the information at each sub-collection stations. The interview with the primary co-operative officials clarified and stated that they hardly get information about coffee price on the international market from the union. From the farmers’ response it also shows that licensed traders offer them a better price. Since both the co-operatives and the traders are operating in a very close area, the farmers had no difficulties to whom they are going to sell. Farmers located in areas where the co-operatives are not operating barely get information on the daily price and they sell to the traders at a lower price at last.

### **2.3. Co-operatives purchasing strategy**

Previously co-operatives purchased only from their members. As more and more firms enter in to the coffee market, the amount of coffee purchased starts to decline and the co-operatives changed their purchasing strategy. The revised purchasing strategy is to purchase coffee from members and non members by organizing sub collection stations. The co-operatives pay 20 birr per day for each employee who purchases the coffee in the sub-station and brings back to the processing station. It has also been observed that the existence of lack of incentive to procure quality cherries by the purchasers in the purchasing activity cause deterioration on the quality of the coffee processing. Since most of the employees don’t have any other means of income, they care only about the money they get from the co-operative. During the survey time it has been observed that co-operatives were procuring only red cherry, where as private traders were procuring both red and dried cherries. Prices of coffee during the survey time shows that, the average purchasing prices of red cherry coffee by the primary co-operatives are birr 2.75 per kilogram while it was birr 2.90 per kilogram by the licensed private traders.

## 2.4. Co-operatives selling strategy

In the half-decade ago, the co-operatives were selling their coffee at the auction market like any other private firms. After the establishment of the union, the co-operative started to sell their coffee either through the union in the international market or to domestic market too.

## 2.5. Promotion strategy in Oligopolistic Market.

Since in a competitive market, every buyer and seller has every information on the commodity, marketing promotion in a competitive market doesn't add value to the product rather it adds cost to the firm. However, in the **oligopolistic market**, promotion assumed and remain of paramount importance. The co-operatives are working on promoting the unique test and flavor of the coffee grown in the area in order to get a market. In the past few years, the co-operative were participating in both national and continental E-café Gold co-operatives coffee competition. Besides participating in the coffee competition, they also carry out sales through internet marketing system.

**Table 1:** Status of the Primary Co-operative Participated in E-café Gold Co-operative coffee competition

2005			2006		
Name	Type of coffees	Rank	Name	Type of coffees	Rank
Kello	washed	1	Kello	Washed	1
Edido	washed	7	Hafursa	Washed	8
Haru	washed	11	Belekara	Washed	11
Aramo	washed	13	Konga	Unwashed	6
Belekara	unwashed	4	Kello	Unwashed	12
Kello	unwashed	5	Belekara	Unwashed	13
Finchewa	unwashed	6			
Koke	unwashed	9			

Source: YCFCU, 2006/07

## 3. Results from the Tobit Econometric Model

Tobit model was analyzed using the program LIMDEP version 3. Before running the Tobit models both continuous and discrete explanatory variables were checked for existence of multicollinearity and heteroscedacity. Variance Inflation Factor (VIF) computed for continuous variables and contingency coefficients for dummy variables to see the existence of

multicollinearity among variables. During the analysis one of the explanatory variable, patronage refund which cause sever multi-co- linearity was minimized.

Maddala (1992) define VIF as:  $VIF (X_i) = 1/1 - R_i^2$  where  $R_i^2$  is the squared multiple correlation coefficient between  $X_i$  and the other explanatory variables. Once  $R^2$  values obtained, the VIF values can be computed using the formula. It is confirmed that all, all the continuous explanatory variables have no serious multicollinearity problem. Similarly, contingency coefficients were computed for the dummy variables. Based on the above test, both the hypothesized continuous and dummy variables were retained in the model.

Heterosedacity test was also carried out to test the presence of heterosedacity using LIMDEP program. It was found that there is no problem of heterosedacity.

### 3.1 Factors affecting the marketing of coffee through the co-operative organization

Table below shows estimates of coefficients of the variables expected to influence the marketing of coffee through the co-operative. The study analyzed 11 explanatory variables and the model result showed that seven variables are found to be significant. The analysis and the result of the explanatory variables is shown below:

**3.1. (i) Management Position in co-operative organization:** The regression coefficient of position in co-operative has positively influenced the probability of coffee marketing through the co-operative and significant at 5% significance level. The marginal effect of having a position in the co-operative on the quantity of coffee marketed through the co-operatives was 0.77qts among members who marketed through the co-operative. Being a member of the management committee of the co-operative increase the probability of coffee marketed through the co-operative among members by 0.012%. A management position in the co-operative increases the attachment of the farmer to the co-operative than the ordinary members. Because of this, co-operative leaders participation in the marketing of coffee through the co-operative is better than the ordinary members.

**Table 2:** Maximum likelihood estimates of Tobit model

Explanatory Variables	Estimated coefficient	Standard error	T-ratio	Change in probability	change among participant of a co-operative $\frac{\partial E(Y_i / Y_i^* > 0)}{\partial X_i}$ $\frac{\partial F(Z)}{\partial(X_i)} = f(z) \frac{\beta_i}{\sigma}$
Constant	-.7894	0.888	-.889		
Education	-0.0665	0.052	-1.268	-0.00001	-0.04394
No. of years of membership	-0.0032	0.012	-.251	0.00001	-0.00214
Position in co-op.	1.1684	0.473	2.469**	0.00012	0.7711
Farm size	0.3725	0.203	1.833*	0.00004	0.2458
Prod. of coffee	0.5232	0.028	18.159***	0.0000	0.3453
Price offered to coffee by co-op	2.7642	0.531	5.200***	0.00028	1.8243
Availability of traders	1.6898	0.734	2.299**	0.00017	1.689
Service by co-op	0.03271	0.389	0.839	0.00003	0.327
Dist. of market center	-1.231	0.556	-2.214**	-0.00012	-1.231
Non-farm income	-0.00021	0.77D-04	-2.770***	0.0000001	-0.00021

Log Likelihood function = -201.2689    No of observation = 120    K= 11

Sigma (δ) = 1.37330658

\*\*\*, \*\*, and \* represent level of significance at 1%, 5% and 10%, respectively

**Source:** Computation from the survey data, 2006/07

**3.1. (ii) Farm size:** Area of land covered with coffee trees is another factor influencing the marketing of coffee through the co-operatives. Farm size influenced positively the probability of coffee marketing through the co-operative and significant at 10% significance level. The marginal effect of farm size on the quantity of coffee marketed through the co-operatives was 0.245 qts among members who marketed through the co-operative organization. Each additional hectare of land increases the probability of coffee marketing through the co-operative among members by 0.004%. This has a bearing that, the larger the land size covered by coffee, the higher will be the coffee harvest, hence the higher the likelihood of marketing of coffee through the co-operative organization by the farmers with larger farm size than farmers with smaller farm size. Further the survey result revealed that 11.6% of the sample co-operative member owned less than 0.5 hectares, 70.8% of the sample members owned between 0.5 to 1.5 hectares and 17.5% of them owned between 1.6 to 5 hectares of land. It is interesting to note that, most of the large farm sizes are owned by older people and small size farms are mostly owned by young people in the region.

**3.1. (iii) Production of coffee:** refers to the amount of coffee the farmer obtained in quintal in the period under study. It was assumed that, the higher the coffee output the farmer obtained, the higher would be the amount marketed through the co-operative organization. **Production of coffee** influenced positively the marketing of coffee through the co-operative and significant at 1% significance level. The marginal effect of output on the quantity of coffee marketed through the co-operative was 0.345 qts among members who marketed through the co-operative. Each additional quintal of coffee produced increases the probability of coffee marketing through the co-operative among members by 0.005%. The result inferred that, there is a growing evidence that coffee yield obtained has a positive relation with the amount of coffee marketed through the co-operative organization.

**3.1 (iv) Price offered to coffee farmers by the co-operative:** The price which the co-operative offers to its members influenced the marketing of coffee through the co-operative positively and significantly at 1% significance level. The marginal effect of offering a competitive price by the co-operative was 1.824qts among members who marketed through the co-operative. Mostly the co-operatives offer a price which is a bit less than the price which traders offer, but some times the co-operatives follow a purchasing strategy by offering a competitive price in order to collect more coffee. A competitive price offered by the co-operatives for quintal of coffee increases the probability of coffee marketing through the co-operative among members by 0.028%. During the survey period it was observed that price have showed variation within a day and farmers were also receiving different price for their coffee. The implication is that in a coffee market where there are many competing marketing agents, one way of competing and staying in the market is by providing a competitive price for the farmers. As observed during the field survey, price offered by the co-operative is the most hindering factor during the purchasing activity since the co-operative get a limited amount of money to carry out the procurement.

**3.1. (v) Presence of traders who offers competitive price:** Presence of traders who offers competitive price was expected to adversely affect the amount of coffee marketed through the co-operative. However, the opposite has been observed in the result. The presence of traders who offers competitive price significantly and positively affected the amount of coffee marketed through the co-operative at 5% significance level. On an average, the change in the

availability of traders on the quantity of coffee marketed through the co-operative was 1.689qts among members who marketed through the co-operative. The presence of traders who offers competitive price increases the probability of coffee marketing through the co-operative among members by 0.017%. The implication behind the result is that, the presence of traders who offers competitive price has forced the co-operatives to follow different marketing strategies so as to stay in the market. A 2006 annual report of the co-operative union revealed that the co-operatives have increased volume purchased by more than 168% compared to the volume purchased in 2003.

**3.1. (vi) Distance of farmer's residence from market center:** In the study area, both the co-operatives and legal coffee collectors are operating in similar market. The distance influenced the marketing of coffee through the co-operatives negatively. The relation is significant at 5% significance level. An increase in one hour walking time indicates a reduction of coffee marketed through the co-operatives by 1.231qts among members who marketed through the co-operative. Those farmers who are relatively nearer to the co-operative have more probability to market more coffee through the co-operatives. As the farmer's residence is far by an hour from the marketing center, the probability of coffee marketing through the co-operatives among members decreases by 0.012%. The implication is that as the marketing center is far from the farmer's residence the probability of the farmers selling their coffee to illegal trader increase. Since the farmers has intention of reducing the costs of time and labor that they spent in searching for the buyer and closeness. Due to this factors farmers probability of selling to illegal traders increases, which in turn decreases the amount of coffee that the farmers marketed through the co-operative business organization.

**Non-farm income:** Non - farm income is also another factor, which affected the marketing of coffee through the co-operative negatively and significant at 1% significance level. The marginal effect of non farm income on the quantity of coffee marketed through the co-operative was 0.00021qts among members who marketed through the co-operative. As the amount of income earned through non farm activity increases the probability of the farmer diversify livelihood through the non farm activities also increase, which in turn decrease the amount of coffee marketed through the co-operative. As seen in the result, as the income of the farmer from non-farm activity increases the probability of marketing of coffee through the co-operatives decreases by 0.00001%.The implication is that since the farmers have a limited land holding, the likelihood of increasing their farm income is limited.

### Recommendations

- ❖ Based on the finding of this study, the following points are suggested for improving the marketing performance of primary co-operatives.
- ❖ Illegal traders are contributing in deteriorating coffee quality, so the government should intervene in controlling the illegal traders or the government has to support and organize these traders into micro enterprise to act as assemblers.
- ❖ The government should provided long term loans or grants to co-operatives which enable them to manage their commercial debts and function more effectively in their role improving the livelihoods of smallholder coffee farmers.

- ❖ Since most of the co-operative leaders lack leadership skill to compete in the free market economy, there needs to have an extensive work from government and non governmental institutions to improve their management skill.
- ❖ The co-operative union is selling coffee received from the primary co-operatives to international importers. Importers of coffee sell to international roasters. In this regard the co-operative union has to create opportunities to sell coffee directly to international roasters.
- ❖ Non member of the co-operatives don't lose benefit at all as they received dividend by selling coffee to the co-operative through their relatives who are members. Hence there is a free rider problem, which indicates that non members are almost the same as members. The co-operative needs to pay attention to this problem as well as facilitate for payment of the registration fee with in a certain period of time to attract more members.
- ❖ Since entry into specialty market need a large amount of certification fee and at the same time the co-operative are losing the money which they are supposed to get from the market because of certification fee. So the co-operative union has to facilitate way for the co-operatives to be certified.
- ❖ Most of the co-operative are operating with malfunctioning machineries which are the main reason for the quality deterioration. So the co-operative union should facilitate to get new machineries in the form of aid or loan from different international coffee organization.
- ❖ The major cost for most of the co-operative is transportation cost. It is because they were using rented tracks. The co-operatives have to negotiate with financial institutions so as to get loan or grant to buy their own tracks.
- ❖ Changing the attitudes of the farmers towards co-operatives is a crucial factor in improving the marketing performances of the co-operatives. Most of the sample farmers do not know about the benefit of the specialty market and need only immediate economic advantages from the co-operatives. So the primary co-operatives and the respective woreda Agricultural and Rural Development offices have to create awareness about the specialty market. Continuous education will have a positive impact on their attitudes.

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