

Cost-Benefit Analysis Of Actors Involved In Coffee Production, Processing And Marketing In Bench Maji Zone Of Ethiopia

Petros Abebe Melerasha, Ratinder Kaur

Abstract: Coffee is produced and exports more than 70 countries and provides economic benefits at each step of the global value chain that links growers to consumers. This study identified the net profit of different actors involved in coffee production, processing and marketing per kilogram and average net benefits. The finding of the study reveals that per one-kilogram green coffee farmers' highly benefited 64.34 % share followed by wholesalers 32.80 % of share and the lowest benefits gained by collectors' share of 2.86 %; whereas in average net benefit gained in the production year coffee is highly profitable at the wholesalers' share of 79.77 % followed by collectors 17.40 % share and lowest in farmers share of 2.83 %. Coffee is highly profitable at wholesalers' level.

Index Terms: cost-benefit analysis, actors, involved, coffee production, processing, and marketing

1. INTRODUCTION

The word coffee derived from the name of region Kaffa; Kaffa zone is in southwest Ethiopia the name of the region in ancient Abyssinia. Most authorities agreed that the coffee plant is indigenous to Abyssinia. Others believe that the first cultivation of coffee in Yemen. coffee cultivated in Yemeni Muslims brought from Ethiopia [1]. The green coffee is the second-largest traded commodity in the world next only to petroleum and its products. Coffee beans are the seeds of a tropical, evergreen tree with the family name of Rubiaceae. There are more than twenty-five species of coffee, the three main commercial types being Robusta, Arabica, and Liberia. Coffee Arabica is considered more suitable for drinking than Robusta coffee. Robusta tends to be bitter and has fewer flavours and a better body than Arabica. For these reasons, about three-quarters of coffee cultivated worldwide are Arabica. Robusta is less risk to disease than Arabica and can be cultivated in environments where Arabica does not succeed. [2] Coffee is one of the most important tropical commodities, produced and exports more than 70 countries and provides economic benefits at each step of the global value chain that links growers to consumers. [3] Globe coffee production in 1990 increased from one hundred million 60 kg bags to one hundred sixty-five million sixty kg in the 2018 production year. Coffee is usually cultivated between latitudes 25° North 25° South; altitude of 3,500 to 6,000 above sea level average annual temperature range between 20 °C and 25 °C [13] Coffee has grown mostly by small farmers.

Around the world, 25 million small producers depend on coffee for a living worldwide [3], [4]. Ethiopia is the origin of coffee Arabica, the largest producer of coffee ranks fifth in the world and first in Africa by annual production and grows wide variety of coffee highly differentiated by agro-ecology, locality, shape, acidity, body flavour, aroma, processing, method, and demand by importing countries they are separately auctioned by their respective origins. Ethiopian economy is depending on coffee production. In Ethiopia, more than fifteen million people, directly and indirectly, depend on coffee production[5]. Coffee plays a great role in the country's economy and leading export source of foreign exchange. Ethiopians thirty-five percent of foreign exchange comes from coffee. According to central statistics Agency, 2003/4-2017/18 showed that the households involved in coffee production in 2003/04 2,420,827 increased to 5,270,777 in 2017/18 increased by 2,849,950; area cultivated in 2003/04 was 232,439 hectares increased to 725,961 hectares' in 2017/18 increased in 493,522 hectares; production in Quintal 1,261,880 in 2003/04 increased to 4,492,298 Quintals increased in 3,230,418 Quintal; productivity per hectares 5.43 in 2003/04 increased to 6.19 in 2017/18 increments was 0.76 Quintals per hectares. Coffee is the main livelihood source for at least one hundred million households around the globe; in Ethiopia, as statistics indicate in 2017/18 production year 5,270,777 households livelihood depend on coffee production. The productivity of Ethiopian coffee is very low compared with other coffee-producing countries. According to [6] Brazil the largest coffee producer of the world produces 1.5 Quintus per hectares. Based on the coffee export data 2017/18, Ethiopia exports coffee to more than 60 countries 233,576 Metric Tons sold at 917 million USD dollars. Top ten countries buy Ethiopian coffees were Germany (22%), Saudi Arabia (16%), USA (11%), Belgium (7%), Sudan (6%), Italy (5%), Korea Republic (4%), France (4%), UK (2%) and Australia (2%). In Ethiopia coffee is not only the source of income-generating but also it is an inevitable beverage in their daily menu. Ethiopia is unique among the worlds' coffee-producing countries in that around 50% of the coffee it produces stays within the domestic market, for consumption by Ethiopians. Drinking is not just

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part of everyday life; it is also deeply embedded in Ethiopian culture. Apart from the well-known Ethiopian coffee ceremony, coffee is used at major events such as marriage and birth, regionally-specific celebrations, and as a medium to build and sustain relationships between family, friends, and community. Bench Maji is one zone of Ethiopian south nations, nationalities people region (SNNPR). According to [7] Coffee is the primary cash crop of the Bench Maji zone and produced 10,097 tons in the production year. This represents 10.6% of the SNNPR's output and 4.4% of Ethiopian total output. Research conducted in the area indicated that various actors involved in coffee-producing processing, and marketing activities share unfair benefits. This study conducted to examine the cost-benefit analysis of different actors involved in coffee production, processing and marketing in the Bench Maji zone, Debub Bench and Sheko districts. Different parties involved in coffee production, processing, and marketing. Return gained from coffee production, processing and marketing are unfair. Empirical studies indicated that coffee is more profitable at a wholesale level [8]. The results of the study enhance developmental partners and government officials' attention to balance the benefit of actors.

2. LITERATURE REVIEW

[9] identified economics of coffee bean marketing at Gama district in Jimma zone of Ethiopia, the study revealed that the total marketing margin of coffee beans channel I (farmers--coffee dealers--export market) was 4.75 birr/kg out of which the producer share was 16%. In channel II (farmers--coffee dealers--export market) value was 3.42 birr/kg 22.5% respectively. Net income on sales ration for coffee dealers (average value 0.54) was higher than that of the coffee collectors' average value (0.09). [8] Study conducted at Bench Maji zone on the coffee market structure and coffee marketing problems in Debub Bench and Sheko districts, Ethiopia Marketing costs, margin and benefit analysis imply that coffee collectors 7.97, farmers 104.98 and wholesalers 48.67 incurred birr per 17 kg. The estimated annual net benefits of a typical coffee producer, collector and wholesaler were birr 3879.88, 1708.28, and 390257.06, respectively. This means coffee trading is highly profitable at the wholesale level.

[10] examined an economic analysis of cost and returns of coffee production the Kodagu district of Karanataka, the study revealed that total establishment cost in small growers 464,947.47Rs./ha and 442513.24 Rs./ ha in case of large growers. The gestation period of coffee was assumed to be 4 years for the present study. The average yield reported in the study area for small and large growers was 1,620.2 kg/ha and 1619.8 kg/ha, respectively. It can be concluded that the productivity of coffee in the study area found to be almost the same for both types of growers. Returns from the plantation were also positive shown by the values 176,586.92 Rs. /ha on average.

3. METHODOLOGY

Research is a systematic search for useful and new information regarding a particular subject. It is the examination of finding the solution to social and scientific problems through systematic and objective analysis. To study "Cost-Benefit Analysis of different actors involved in coffee production, processing, and marketing" Cost-Benefit analysis methods found appropriate. The populations of this study were coffee

producer farmers of six selected kebeles namely Kite, Janchu, Gelit, Fajeka, Mehal Sheko and Gizimeret of Debub Bench and Sheko. Both Debub Bench and Sheko districts were purposely selected by researchers among districts of the Bench Maji Zone. According to [14] five districts namely Sheko, Debub Bench, Guraferda, Meaint Shasha and Shey Bench specialized coffee and three districts namely Meaint Golidiya, Maji and Beru diversify coffee. The average zonal coffee production in tons from (2013- 2017) was 47,849.836 from this 52.38 % 25,065.606 tons coffee produced by Sheko and Debub Bench districts in addition to this concerning coffee cultivation in the zone 119,178 hectares of land covered by coffee, from this 53.23% 63,447 hectares of coffee covered by Sheko and Debub Bench districts. Therefore, from the above reasons, researchers purposely select Debub Bench and Sheko Districts. Researchers geographically organized each selected district into three non-overlapping clusters and from each cluster one kebele selected by a simple random sampling method. Therefore, from Debub Bench district Gelit, Janchu and kite kebeles in the same way from Sheko district Mehal Sheko, Gizimeret and Fajeka kebeles selected.

To determine sample size, the formula developed by Krejcie and Morgan (1970) and suggested by [15]

Formula

$$n = \frac{x^2 NP(1-P)}{d^2(N-1)+x^2 P(1-P)}$$

n= required sample size.

X² = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841).

N = the population size.

P = the population proportion (assumed to be 0.5 since this would provide the maximum Sample size)

d = the degree of accuracy expressed as a proportion (0.05).

Table 1, Population and sample distribution is kebeles

No	kebele	District	Population	Sample
1	Kite	D. B	1,254	87
2	Gelit	D. B	893	62
3	Janchu	D. B	686	47
4	Fajeka	Sheko	617	43
5	Mehal S	Sheko	715	50
6	Gizimeret	Sheko	994	69
	Total		5,159	358

By using snowball sampling method 18 Coffee collectors, three from each selected kebeles included in the study and 18 coffees wholesales 9 from Debub Bench and 9 from Sheko districts selected by using a systematic sampling method also included. [11] observed two criteria measurements of research, validity, and reliability and suggested that valid tools must be reliable, but reliable tools may not necessarily be valid. The instrument is not valid constructs not measuring the right content, internal validity measuring wrong content and statistical conclusion validity mathematical relationships within a certain degree of confidence hypothesis are ruled out. To minimize measurement error the researcher's employed face validity to check format and language by Mizan- Tepi University English department content validity tested by Bench Maji zone Coffee, Tea, and Spice coordinator and Bench Maji coffee cooperatives union. Before actual data collection practice the questionnaires pre-test conducted by researchers on 20 respondents of none selected kebeles of Debub Bench district (Zemika). A pilot study conducted and during the pilot study researchers understands to include some additional questions

for main data collections. Both primary and secondary data were used for this study. Primary data collected from coffee farmers by questionnaire, for coffee collectors by using interviews and from secondary financial statements of coffee wholesalers collected from the Revenue office. A cost-benefit analysis conducted to compare the effectiveness of existing business operations. Cost-benefit analysis: - identify monetary values on the costs and benefits. Typically analyses subtract costs from benefits to obtain net profits/benefits.

Net Benefits=Total Benefits-Total costs

To analyze cost-benefit analysis [12] suggested following some steps. Based on the suggestions two steps designed to analyze the cost-benefit analysis of different actors. Set framework for the analysis: - To analyze net profit of parties involved in coffee production processing and marketing within the Bench Maji Zone of Ethiopia, one-year coffee production (2018/2019) cost and benefits of farmers in productive hectares the time duration for farmers one-year coffee give yield annually, for wholesalers one year the red cherry market starts September and ends November and dry cherry start from December end at March and coffee collectors commission workers. Identify and recognize costs and benefits: cost of 351 coffee farmers in 389.25 hectares' productive land covered within coffee recognized. Cost included in this study gestation period costs (cost from seedling to harvest time) costs from seedling up to first harvest year four years cost divided to 10 years (productive age of coffee) and one-tenth costs considered, tax paid for government, material costs (materials used for one year and used for long times salvage value) transportation cost marketing cost, family labour also considered in money; wholesalers financial statement and coffee collectors costs considered.

4. DISCUSSION

4.1. Coffee Farmers Cost and Benefit Analysis

The response showed that 351 sampled coffee farmers cultivated coffee on 824.25 hectares of land among these 389.25 hectares covered with productive coffee, annual dry coffee cherry production produced in 2018/19 production year 594,117 Kg, and cost of production 10,433,731. According to [13] one unites weight of dry Arabica cherry equivalent to 0.44 Kg green/clean coffee. Therefore, 594,117 Kg dry coffee cherry equivalent to 261,411.48 green/ clean coffee. Productivity per

Net Benefits = Total Benefits – Total costs

$$\begin{aligned} & 735,950 - 323,380 \\ & = 412,570 \text{ birr} \end{aligned}$$

Benefit gained from 1kg green coffee, dry cherry multiply by 0.44 therefore 3,716,300* 0.44= 1,635,172 kg green coffee then Net profit divided to green coffee (412,570/ 1,635,172= 0.25) from each kilogram coffee collectors gained 0.25 birrs in

Net Benefits = Total Benefits – Total costs

$$\begin{aligned} & 625,175 - 239,760 \\ & = 385,415 \text{ birr} \end{aligned}$$

According to [13]1 kilogram clean/green coffee equivalent to 0.165 kg of red cherry coffee; to examine benefit gained from 1kg green coffee, amount of red cherry coffee multiply by 0.165 therefore 1,273,300* 0.165 = 210,094.5 kg green coffee then Net profit divided to green coffee (385,415/ 210,094.5= 1.83) from each kilogram green coffee collectors gained 1.83 birr in red cherry coffee collection. In Average

$$\frac{\text{Sum of Net profit of dry coffee} + \text{sum of Net profit of red coffee}}{\text{number of sampled coffee collectors}}$$

hectare equals to total production divided into productive land in hectare 261,411.48/389.25. In 389.25 hectares of land 261,411.48 Kg green coffee produced within the total cost of 10,433,731 and gained a net profit of 2,527,315 birrs. In order to compare the benefits gained by different actors, the net profit gained from one-kilogram green coffee analyzed. To get cost of one-kilogram green coffee divide production cost of coffee to yield coffee in a hectare.

$$\frac{10,433,731}{261,411.48} = 39.91 \text{ birrs}$$

To get total profit or selling price of one-kilogram green coffee total selling price divided to the total production of green coffee (Total selling price)/(Total green coffee produced)

$$\frac{12,961,046}{261411.48} = 49.58 \text{ birrs}$$

Net Benefits=Total Benefits-Total costs
= (Net Benefit=49.58-39.91)
= 9.67 Birr

Average benefit of coffee farmers (Sum of net profit divided to Number of sampled coffee farmers) $\frac{2,527,315}{351} = 7,200.32 \text{ birrs}$

4.2. Collectors Cost and Benefit Analysis

Most of the coffee collectors are commission workers, delegated by coffee wholesalers in official letters and act on behalf of wholesalers; but few collectors act illegally in the village purchase coffee cherry from farmers in cheap price and sell for wholesalers. Red cherry coffee selling season starts from the mid of September up to the end of November and the dry coffee market starts from December mid up to March. Most of collectors took money, sack / bags and other materials needed for coffee purchasing from wholesalers in order to purchase coffee and red coffee should be before 8 hours reached to processing industry, dry coffee cherry stored in wheelers store at purchasing day. Coffee collectors engaged in both dry and red cherry. Data collected from 18 coffee collectors in 2018/19 year showed 3,716,300 KGs of dry cherry purchased in average price of 20.36 birrs per KG and sold in average price of 20.86 birrs; gross profit gained was 735,950 birrs and total costs paid for labour, materials transportation, sacks/ bags paid were 323,380 birrs and gained net profit of 412,570 birrs.

dry coffee collection. In same way red cherry coffee data of the same collectors showed that 1,273,300 KGs of red cherry coffee purchased in average price of 9.44 birrs per KG and sold in average price of 9.94 birrs; gross profit gained were 625,175 birrs and total costs paid for labour, transportation, sacks/ bags were birrs 239,760 and gained net profit of 385,415 birrs.

Therefore, $\frac{385,415+412,570}{18} = 44,332.5 \text{ birr}$

4.3. Wholesalers

To analyze cost- benefit analysis of coffee wholesalers, amount of green coffee sent to Ethiopian commodity exchange and financial statement of 2018/19 year was used. According to Agriculture and Natural Resource office (2018/19) report 741,437.36 Kg coffee sent to Ethiopian commodity exchange by 18 wholesales and financial report of 18 selected wholesalers showed coffee sold in birrs 38,861,694; gross profit gained 10,600,228.43; cost paid for different activities such as commission paid for coffee collectors, loading and

unloading cost, transportation, interest, tax, packing materials, administrative cost totally 6,943,638.95 birrs and net profit

Net Benefits=Total Benefits-Total costs

Net Benefits=10,600,228.43-6,943,638.95

= 3,656,589.48

To find Net benefits of one kilogram of green coffee divide net profit after tax to the amount of coffee sold

$\frac{3,656,589.48}{741,437.36} = 4.93$ birrs Therefore wholesalers gained 4.93 Birrs

per kilogram of coffee. Average net profit of wholesalers divided to number of sampled wholesalers' = $\frac{3,656,589.48}{18} = 203,143.86$ birrs

5. CONCLUSION

Cost-benefit analysis of actors involved in coffee production, processing and, marketing in Bench Maji zone of Ethiopia, finding of the study reveals that actors net benefit from one kilogram green/ clean coffee, farmers gained 9.67 birr share of 64.34%; wholesalers gained 4.93 birr share of 32.80 % and, coffee collectors gained 1.83 birrs in red cherry coffee beans and 0.25 birr in dry cherry 0.43 birrs share of 2.86 %. Average annual net profit and share of farmers, wholesalers, and collectors in birr farmers gained 7,200.32 birrs and share of 2.83 %; wholesalers 203,143.86 birrs and share of 79.77 % and followed by coffee collectors 44,332.5 birrs and 17.40 % share. This indicates that net benefits gained from one-kilogram farmers' highly benefits followed by wholesalers and the lowest benefits in the study area were coffee collectors whereas in average net benefit gained in the production year coffee is highly profitable at the wholesalers' followed by coffee collectors and lowest in farmers.

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