

Research Article

# Costs and Benefit Shares of Actors Along the Soybean Value Chain Analyses at Nadhi Gibe District of Jimma Zone, South Western Ethiopia

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## Abstract

To determine the actors' profit margins, a survey was carried out in the Dacha Nadhi district of the Jimma Zone, Oromia, Ethiopia. In response to inquiries within the subject field, we examine the elements that affect the strength of soybeans. In the Dacha Nadhi district, there are 17 pastoral Kibbe administrations. Four Kibbe administrations were selected purposively, leaving 8 Kibbe administrations that were purposefully named based on the current position of soybeans as a product. Input suppliers collectors, former retailers, former wholesalers, public wholesalers, public retailers, processors, exporters, and intentionally have been mentioned in semi-structured questionnaires that have been constructed. Used to gather information from supporters or facilitators. The study took into account information on from both primary and secondary sources the data were analyzed using descriptive value chain diagrams and econometric techniques. According to research, consumers, input suppliers, soybean directors, collectors, wholesalers, retailers, processors and exporters are the main participants in the value chain. Traders made up 65.8% more of the overall profit than producers did. On the other side, by removing undesirable chain actors from the chain, access to cooperatives and the encouragement to work together to collect soybeans from producers can have a substantial impact on the interests of producers. As a result, coordinated efforts are given.

## Keywords

Benefit Share, Market Supply, Profit Share, Soybean Value Chain, Ordinary LeastSquares, Actors

## 1. Introduction

Soybeans are among the most important agricultural products for global trade. Even though the majority of soybeans are restricted or rumped to produce useful products, they are also frequently sold as an intermediate input in the form of grains. In 1998, over 160 million tons were produced on 70 million hectares of land; by 2018, that amount had grown to 350 million tons on 125 million hectares [1], with the United

States, Argentina, Brazil, China, and India accounting for 92% of the total production. In [2] In just three years, the area of soybeans under organic management has doubled to around 560,000 hectares (fiBL statistics 2020), or 0.5% of the entire soybean acreage. Ethiopia's total production from smallholders and commercial farms resulted in an estimated 150,000 tons in 2014–15. Ethiopia's soybean production grew rapidly

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**Received:** 9 January 2025; **Accepted:** 17 March 2025; **Published:** 10 April 2025



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between 2008 and 2016, increasing at rates of 30.8 percent, 45.4 percent, and 11.2 percent year, reaching 38,166 hectares of land to produce 812,420 quintals of soybeans with a national average yield of 21.3 Qt/ha [3]. The current five-year plan, GTP II, gave due consideration to the production of soybeans as an industrial crop. It is projected that production will increase from 0.72 million quintals in 2015 to 1.2 million quintals by 2020 in order to meet market demand by establishing connections with the business sector and the global market. [4] As of right now, the average soybean seed yield nationwide is 2.43 tons [5]. However, the productivity of this crop is still far below the global yield, in part because of the prevalence and widespread presence of soybean field pests (weeds, insects, and diseases) and storage pests (storage insects and post-harvest diseases). Other limiting factors for low soybean production and productivity include drought, irregular rainfall, low soil fertility, inadequate use of improved technologies, and a lack of training on crop utilization.

1. To estimate the profit share of actors along the value chain
2. To identify soybean value chain actors
3. To analyze factors determining soybean supply to the market

## 2. Methodology

### 2.1. Study Area

Dacha Nadhi part of the Jimma zone (Figure 1) and bordered on the south by Omo Nada on the west by Kersa, on the north by limmu Kossa and on the east sokoru. The administrative center of the districts is Dimtu. The altitude of this district ranges 1640-2800, mountains include Gashe, Haro, Gebera and Hako Alibity. Perennial rivers include Gilgel Gibe, Busa, Nedi and Aleltu.

### 2.2. Sampling Procedures

Based on the quantity of soybeans produced and the involvement of farmers in soybean marketing, the Dacha Nadhi district was purposefully selected as the research region. There are 17 rural Kebeles administrations in the Dacha Nadhi district. 8 kebele administrations were purposefully chosen from among these. Additionally, four of them were chosen at random from this remote kebele. As a result, random selections of Dacha Nadhi, Riga Siba, Kajelo, and Tiyo kebeles were made. On average, there are 76, 61, 68, and 43 soybeans. Dacha Nadhi, Riga Siba, Kajelo, and Tiyo kebeles are the respective production locations. In order to draw a sample frame for the study population, probability proportional to size was used. In order to choose the sample soybean producer farmers, the snowball sampling technique was used, taking into account the sampling frame that was selected from each kebele.

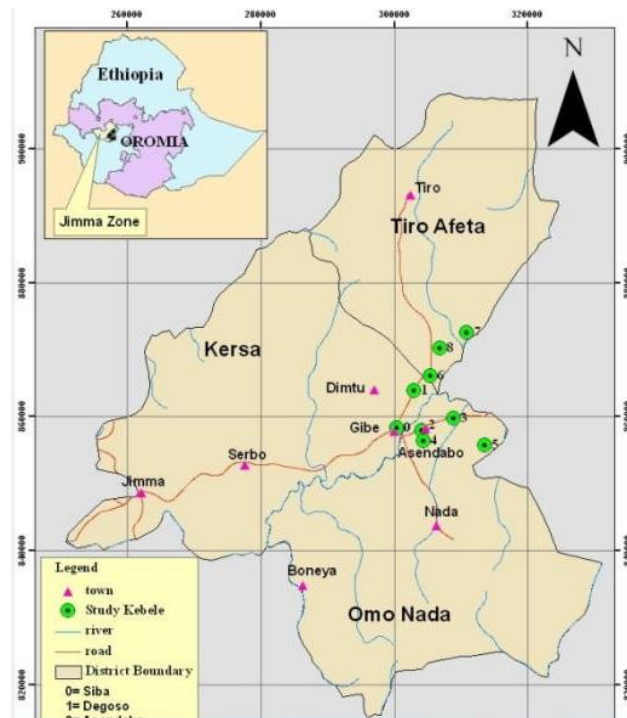


Figure 1. Map of Dacha Nadhi Jimma zone SCA 2021.

### 2.3. Sampling Techniques, Sampling Procedures and Sample Size Determination

Both probability and non-probability sampling methods were employed in this study. Sample kebeles and producers were selected using probability sampling techniques. The study district, prospective Kebeles, total producers from selected Kebeles, interviewed respondents, traders, and customers were all selected using non-probability methods.

The study's sample was selected from among all actors involved in the soybean value chain, including producers, collectors, wholesalers, processors, retailers, exporters, and consumers. Using the proper sampling methodologies, actors in the soybean value chain have been chosen based on their distribution.

Kebeles and Producer's sampling: - Dacha Nadhi district were selected purposively as the study area based on the amount of soybean production and participation of farmers in soybean marketing. There are 17 rural kebele administrations in the Dacha Nadhi district. From these rural Kebele administrations 8 kebele administrations were selected purposively based on current production level of soybean. And also from these selected rural kebele administrations 4 kebele administrations were selected randomly. Accordingly, Dacha Nadhi, Regaseba, Kajelo and Tiyo kebele administrations were selected randomly. There are about 76, 61, 68 and 43 soybean producers in Dacha Nadhi, Regaseba, Kajelo and Tiyo kebele administration, respectively. Sample frame was drawn for the study population of selected kebele administration and by employing Probability Proportional to Size (PPS), the number of farmers taken from each kebele was deter-

mined. Finally, based on the sampling frame drawn from each kebele administration, snowball sampling technique was applied to select the sample soybean producer farmers.

**Trader's sampling:-** This survey includes intermediary value chain actors involved in soybean marketing such as collector's wholesalers, retailers, processors, exporters and consumers. Selection of these actors is range from the study area to the major towns and marketing centers such as Dimtu town,

Asendabo town and Jimma town. These actors were selected purposively based on their direct involvement in the soybean value chain coming from the production point of the study area up to the final market. Because of lack of secondary data record on soybean traders, trace ability and snow ball sampling technique was employed to select wholesalers, collectors and processors. Retailers were selected randomly from Dimtu town, Asendabo town and Jimma town.. Accordingly, 1 wholesaler, 7 retailers, 4 collectors, 2 exporters and 1 processor were selected purposively based on their involve-

ment in transaction of soybean originating from the study district.

Sample size determination for total population and selected sample Kebeles of Soybean producers. In the purpose of the study population size, three criteria usually need to be specified to determine the appropriate sample size: the level of precision, the level of confidence or risk and the degree of variability in the attributes being measured (Miaoulis and Michener, 1976). The sample size was determined using the formula below as reported by Yamane (1967) with 95% confidence interval.

$$n = N / (1 + Ne^2), 53 \frac{248}{1+248(0.05)^2} n = 153$$

n=sample size

N= total population of households in four soybean producing Kebeles=margin of error at 5%

**Table 1.** Choosing the sample size for a sample of specific soybean growers Kebeles.

Woreda	kebele	Soybean HH producers	Ratio	Sample HH
Dacha Nadhi	Dacha Nadhi	76	0.31	47
	Regaseba	61	0.25	38
	Kajelo	68	0.27	42
	Tiyo	43	0.17	26
Total	Four kebele	248	1.00	153

Source: Owen survey results

### 3. Types of Data, Source and Methods of Data Collection

#### 3.1. Types of Data

To accomplish this study, both qualitative and quantitative types of data were used. Qualitative data collected include actors and their respective functions, marketing condition, support services aligned along value chain, socio-economic characteristics of soybean producers, soybean production systems, value additions of soybean, soybean distribution pattern in the area, etc. Quantitative data like direct and overhead costs incurred by each actor, market margin, percentage share of soybean value chain actors, income from sale of soybean, age of the actors, volume of soybean sold and bought, selling and buying price of the soybean in unit of measurement, distance to the nearest market, additional sources of income, etc. were collected.

#### 3.2. Sources of Data

In this study, both primary and secondary sources of data were used. These data were consistent, available, adequate and reliable for the planned objectives to be addressed. The primary sources of the data include sample respondents, key informants, focus group discussion, extension workers, Agriculture and Natural Resource officers and soybean traders. Accordingly, data on soybean production, soybean marketed, Quantity of soybean supplied, distance to nearest district market, age of the household head, Sex of household head, Agricultural extension service, educational status of the household head, family size, access to market information, purpose of soybean production, soybean producing experience, training on soybean production and soybean marketing experience. Moreover, member ship of soybean cooperatives, number of oxen and type of sellers and buyers survey made to obtain above-mentioned information.

To generate appropriate secondary data on soybean pro-

duction and marketing, the data was collected from different published and unpublished sources. The secondary data collected from Central Statistical Authority (CSA), Reports, and documents of Agriculture and Natural Resource officers, Research centers, Cooperative development office and trade, NGO (facilitator for change) and industry office.

### 3.3. Method of Data Collection

To capture enough data for the study, both close ended and open ended (semi- structured) questionnaire was prepared and to collect the data, personal interview and community based participatory approach (KIF and FGD) were used. Enumerators who have college diploma and working as development agents were recruited and trained for data collection. Before data collection, the questionnaire was pretested on seven farmers and four traders to evaluate the suitability of the design, clarity and interpretation of the questions, relevance of the questions and time taken for an interview. Hence, appropriate modifications and corrections were made on the questionnaire based on the feedback obtained. Data were collected under continuous supervision of the researcher. Document review was made to take secondary data related with the study. Finally in order to develop the data accuracy, qualitative information were gathered through FGD and KII were conducted accordingly.

### 3.4. Data Analysis

To transform the raw data of the study into fact, both descriptive and inferential statistics, value chain analysis and econometric analysis were employed. Descriptive statistics such as frequency, mean, percentage, and standard deviation were used in the process of comparing socio-economic, demographic and institutional characteristics of respondents of the districts. In addition to this, descriptive tool tables were used to present the results. Inferential statistics such as t-test, chi-square test, F-test, Adjusted  $R^2$  and P-value were used to test adequacy of the model and hypothesis for the statistical significance of parameters and variation among the sample respondents. Maps in the process of examining and describing marketing functions, facilities, services and respondents characteristics were used to illustrate the overall system of soybean production and marketing in the area. Observations along the value chain are summarized using value chain analysis through mapping, profit margin distribution of the actors in soybean value chain, defining upgrading needed within the chain and value chain governance were used. Econometrics analysis employed in order to analyze the de-

terminants of soybean supply to the market through multiple linear regressions.

## 4. Result and Discussions

These section offerings the main findings of the study. It has three main sections. The earliest section deals through description of the sample households. The second section presents result of actors and their roles benefit share of the actors. The third section offerings results of econometric analysis which holds the factors of market supply of soybean exhausting multiple liner regression (MLR) models.

### 4.1. Soybean Productivity

The average soybean yield is estimated to be 10.39 Qt/ha in the study area. The yield doesn't show much variation among the districts because those farmers who produce in Dacha Nadhi district frequently access extension services and supported in training and advisory from Dacha Nadhi bureau of agriculture and natural resource. They are also beneficiaries from Jimma agricultural research center in accessing bio fertilizer and improved soybean seed variety.

### 4.2. Soybean Marketing and Market Chain in the Area

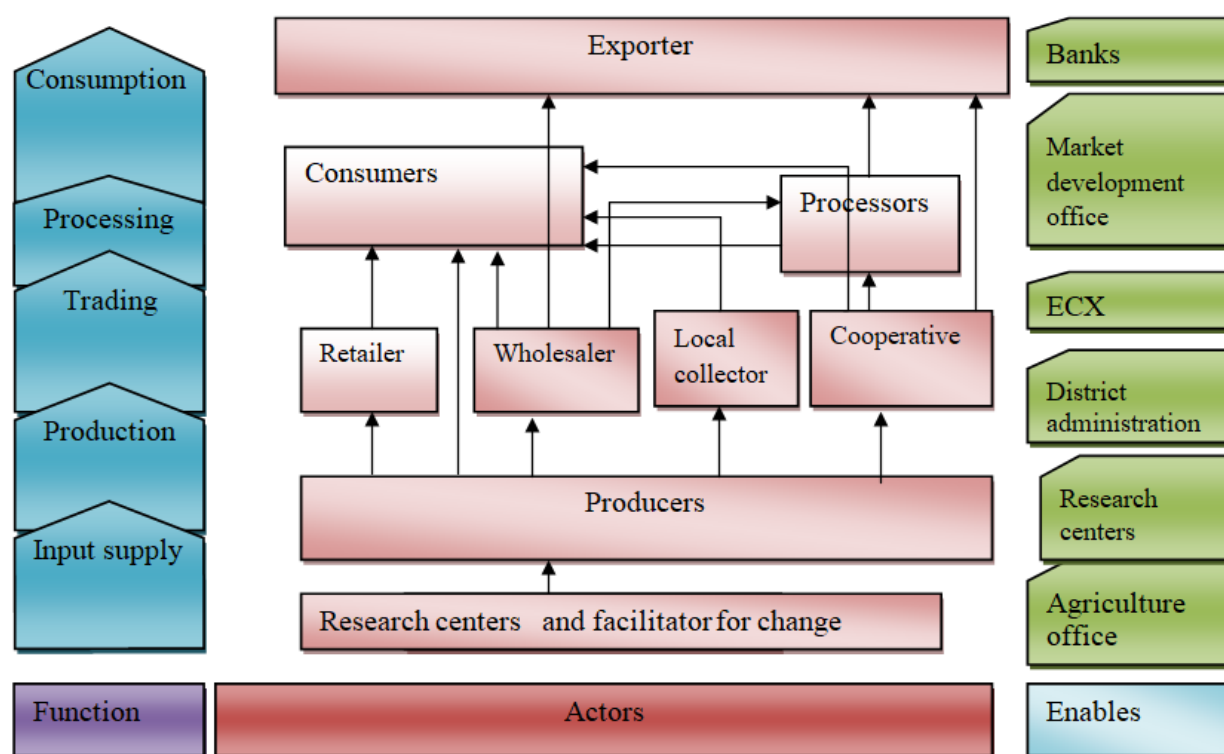
#### 4.2.1. Quantity Sold

On average, market delivery of soybeans via producers ' amounts to 4.47 quintals in the 2020/21 production year. The maximum and minimal quantities of soybean supplied to the local market were observed to be 5.73 and 2.48 quintals, respectively. The end result confirmed that 93.5% of soybeans are supplied to the marketplace at the beginning of the production year.

#### 4.2.2. Mapping of Soybean Value Chain in Dacha Nadhi District

Value chain mapping is drawing a graphic demonstration of the chain, which encompasses numerous links among the soybean input suppliers, producers, traders, processors and consumers and the support service providers such as logistical facility providers, transporters, and the enabling environment. It also helps to identify the different actors involved in the soybean value chain, and to understand their roles and linkages. Soybean value chain map of the study area is described below.





Source: Own sketch: Value chain map of soybean in Dacha Nadi district

**Figure 2.** Value chain maps.

#### 4.2.3. Actors and Their Function in Soybean Value Chain

The value chain map illustrated the participation of multiple actors who play a role in the value chain perhaps directly or indirectly. For the World Economic Forum 2009, [6] state that the direct actors are those engaged in economic activities along the supply chain (suppliers of input, producers, traders, and consumers), while the indirect actors are those who offer financial or non-financial support services, such as credit agencies, business service providers, the government, NGOs, cooperatives, researchers, and extension agents. Farmers, merchants, and consumers are the key stakeholders in both districts' soybean value chains, along with suppliers of soybean seed and other inputs. Each of these actors contributes something useful to the process of branding a product. Some jobs or roles require more than one actor to accomplish, and some actors take on multiple roles.

#### 4.2.4. Input Suppliers

In the soybean value chain, the input suppliers are the first players. Currently, the main sources of input supply in the Dacha Nadhi district are the Jimma Agricultural Research Center and the Office of Agriculture and Rural Development. They are in responsible of supplying farm equipment, fertilizers, insecticides, and herbicides—all of which are essential inputs throughout the production stage. All of the soybean

producers in the Dacha Nadhi district received input from the Office of Agriculture and Rural Development, research facilities, and a change facilitator (local NGOs). Some farmers just used organic fertilizer (compost and manure), while others used both inorganic and organic fertilizers, depending on how much land was planted to soybeans and how the farmers felt about the soil. Private retailers usually sell pesticides

#### 4.2.5. Producers

The initial actor in the soybean value chain and the first link in the marketing chain are soybean farmers. They are the main players who carry out the majority of value chain tasks, from handling and marketing post-harvest to preparing farm inputs on their own farms or acquiring them from other sources. Plowing, seeding, fertilizing, weeding, controlling pests and diseases, harvesting, and post-harvest processing make up the majority of what farmers do. Growing soybean crops can be very competitive and cost-effective due to the variety of agro-climatic conditions, and there are many prospects for research.

Sadly, the farmers have not taken advantage of these chances because they obtain a reduced profit margin for their produce at the marketplaces. The district's rain-fed system is used to produce soybeans. The most popular form of production in the districts is sole cropping. The handling of the post-harvest, which involves various tasks like sorting, packing, transporting, loading, and unloading, is carried either by the farmers themselves or by traders. The average amount of

land owned by farmers who engaged in the production of soybeans during the growing season was found to be 0.43 hectares per household.

#### 4.2.6. Assemblers /Local Collectors

It is the first link between producers and other traders. According to Emana [7], These are small trading individuals who collect the product in small quantity directly from producers and resell to brokers/wholesalers, oil millers and exporters in a more marketable quantity. They act as intermediaries who do not add value but merely snatch the benefit that could have accrued to the producers. They use their financial resources and their local knowledge to bulk soybean from the surrounding area. They play important role and they do know well areas of surplus. Collectors are the key actors in the soybean value chain, responsible for the trading of soybean from production areas to wholesale and retail markets in the Dacha Nadhi Woreda. The outlet shares 10% of soybean supply.

#### 4.2.7. Wholesalers

Wholesalers are primarily engaged in purchasing soybean from producers and collectors in greater quantities than any other actors and supplying them to retailers, exporters, and consumers. They primarily work in cities [8]. According to the survey's findings, the primary soybean assembly centers in each area's surroundings are wholesale markets. Compared to traders in the research area, they have superior access to storage, transportation, and communication. More than 90% of those surveyed sell their goods to wholesalers in the nearby urban area. 45 percent of the market supply of soybeans is shared by the outlet.

#### 4.2.8. Retailers

Additionally significant major actors in the soybean value chain in the research area are retailers. They are responsible for purchasing the goods from producers, collectors, and wholesalers and keeping it in their temporary storage. Then, after sorting and packaging, they bargain with neighboring buyers to purchase raw soybean. 5% of the market's supply of soybeans is shared by the outlet.

#### 4.2.9. Union and Cooperatives

Cooperatives and unions are one sales channel for small-scale farmers. Through the cooperatives of its members, unions collect soybean from every farm household. The soybeans are then mostly collected by the cooperatives from the farmers who are members. The unions clean, store, and search for channels for export sales of the soybean. Instead of participating as sellers in the ECX marketing framework, the unions choose to do so as consumers. This is due to the fact that they have grown to have the organizational and financial resources to export. To encourage unions to engage in high-value addition operations, such as the export and

import of goods and inputs, the government and/or concerned governmental entities are making every effort. 34% of the supply of soybeans is shared by the outlet.

### 5. Processors

In Ethiopia, particularly in the Addis Ababa region, there are numerous businesses that process soybeans. Faffa Food Share Company, Seka Business Group, Hilina Enriched Food Processing Center, and Health Care Food Manufacturing are a few of these processing factories or firms in Ethiopia. These businesses are working hard to transform soybean into various solid and liquid forms so that it can be conveniently consumed. They get the raw soybean from wholesalers, primarily in Mesalemia, and process it before selling it in various forms to hotels, supermarkets, wholesalers of ET Fruits, and end users. To meet their demand, the aforementioned businesses need to buy raw soybean in large quantities.

#### 5.1. Consumers

The people who buy items to consume them are called consumers. Even though Ethiopia is well known for its soybean production, the product is not widely used. But as people have come to understand its significance, soybean is now consumed in a variety of ways, including in Nifero, Kolo, and in processed forms like soya blended flour, soya milk, soya oil, and sweet soya, among others. Processors, distributors, merchants, supermarkets, and hotels provide it to customers in a variety of ways. Households, restaurants, and institutions were the three main categories of soybean consumers. Employees and residents of urban and rural areas who make purchases and consume are considered private consumers. Demand for soy oil, particularly in its processed form, is now very high. As an illustration, the Health Care Food Manufacturing Company sold 480,000 liters of soy oil for ET fruits solely.

#### 5.2. Exporters

These public and private businesses purchase the seed from wholesalers and collectors to resell after processing and packaging in the export market. The exporter is the main player in the soybean market. These are the wholesalers' biggest customers for soybeans. These significant exporters have their own purchasing branches, and they are generally based in Addis Abeba. Most of the exported soybean is purchased by these purchasers using various tools. They only compete on price when they buy on the open market with cash from anyone wanting to sell. They have added forward markets in addition to spot purchases. Only a small percentage of large-scale commercial farmers engage in exporting. The study's findings indicate that not all soybean farmers export their own products directly.

### 5.3. Supporting Actors

These actors include those who offer research, finance, training and extension, information, and supportive services. The level of success of value chain actors is determined by their access to information or knowledge, technology, and finance, claim [9]. The Oromia Agricultural and Natural Resource Management Bureau, primary cooperatives, micro-finance institutions, nongovernmental organizations (NGOs), and the office for trade and market development, research facilities, and universities are among the key supporting players who play a crucial part in the delivery of such services.

### 5.4. Access to Agricultural Extension Contact

According to the survey results, almost everyone who was sampled received advice about the value chain for soybeans in the Dacha Nadi district. According to Siziba [10], having access to agricultural extension services increases one's like-

lihood of taking part in soybean markets. The outcomes show how crucial upgraded technology and assistance services are for encouraging soybean market participation. On the other hand, access to extension contacts and the market supply of the output were found to have a positive and substantial relationship by [11]. (2012) and [12] Balogun et al. (2012). The main players who inform and advise farmers on best techniques for managing and producing soybeans are development agents. Additionally, there were infrequent and irregular interactions between development agents and producer farmers. Furthermore,

### 5.5. Marketing Costs and Benefit Shares of Actors in Soybean Value Chain

Table 2 below indicates different types of marketing cost related to the transaction of soybean by collectors, wholesalers and exporter and the benefit share of each marketing actor.

**Table 2.** Marketing costs and benefit splits among soybean value chain participants.

Item(Birr/qt)	Producer	Collector	Wholesaler	Exporter	Hori. sum
Purchasing cost	-	691.60	746.10	879.50	2317.20
Production cost	550	-	-	-	350
Material cost	10	10	10	10	40
Transporting cost	10	15	25	25	75
Communication cost	-	10	25	25	60
Loading/unloading	-	-	10	10	20
Tax	-	-	2	2	4
Cleaning	-	-	20	-	20
Total marketing cost	20	35	72	67	194
Total cost	570	726.6	818.10	946.5	3061.20
Average waited selling price	691.60	746.10	879.50	1100	3417.20
Market margin	671.10	711.10	807.50	1033	3222.70
%t share of margin	20.80	22.10	25.05	32.05	100
Profit margin	121.60	19.5	61.4	153.5	356
% of Share profit	34.2	5.5	17.2	43.1	100

As the product moves from one actor to another in the soybean value chain, each actor adds value to the final product.

In a sense, the actors alter the product's shape by enhancing the grade through sorting, cleaning, or by generating space and time utility. Traders have significantly lower oper-

ational costs than farmers, but they also have a higher profit margin. That indicates that merchants took more than 68.8% of the entire profit margin by merely purchasing from farmers and selling to customers. Farmers only received 34% of the profit margin despite completing all the labor and taking all the risks involved in growing soybeans.

The power dynamics between the actors are reflected in this disproportionate share of rewards.

Risks and other uncertainties that occur during soybean production and cause yield losses are the responsibility of the soy bean producers. These risks and uncertainties include: a high prevalence of soybean diseases, rodents and insect pests, drought, flood, failure of germination due to subpar seed, and damage from wild and domestic animals. As a result, manufacturers tend to take risks while having poor profit margins and little decision-making authority. On the other hand, the merchant sets the prices and is unaware of the expenses and suffering involved in growing the commodity. When asked whether producing soybeans is lucrative or not, the farmers said that if they had known (calculated) all the costs involved in producing the crop, they would have opted never to do so again.

## 5.6. Factors Affecting Quantity of Soybean Supplied to the Market

Soybean is the principal cash crop for farmers in the Jimma zone and is mostly produced in the study area for the market. The survey's findings showed that all farmers, even

those with extremely small households, only supply product to the market after satisfying their own needs. All proposed explanatory variables were examined for the presence of multicollinearity and heteroscedasticity issues prior to running the ordinary list square regression model. The degree of multicollinearity among continuous explanatory factors and the contingency coefficient among discrete (dummy) variables were both examined using the variance inflation factor in the study. The VIF was calculated using Stata 14.2, a statistical software program. The findings ranged from 1.12 to 2.73 for all VIF levels. Multicollinearity was as a result

The Breusch-Pagan/Cook-Weinberg test (hettest) was used to determine heteroscedasticity, and the results revealed that there is no heteroscedasticity issue. The findings of the endogeneity tests further demonstrate that the market's supply of soybeans is not affected by endogeneity. The econometric analysis's findings show that among the 13 hypothesized factors, the sex of the household head, the distance to the closest market, the frequency of extension visits, and cooperative membership all had a positive and substantial impact on the market supply of soybeans.

**Table 3.** Determinants of soybean market supply (OLS).

Variables	Coefficients	S.E	T	p>t
Training	0.005	.009683	0.56	0.579
Age	0.000	.000893	0.76	0.447
Sex [Male]	0.051***	.014020	3.69	0.000
Education	-0.002	.012405	-0.23	0.817
Family size	0.012	.018557	0.67	0.503
Dist.Market	-0.02	.006213	4.08	0.000
Exp, production	0.003	.005681	0.58	0.565
Cooperative membership [Yes]	0.05***	.015441	3.35	0.001
No of oxen	-0.00	.011380	-0.11	0.916
Frequency of agricultural extension services	0.01**	.007448	2.49	0.014
Market information	0.019	.019846	0.98	0.327
Transport facility	0.004	.011169	0.38	0.702
_cons	-.0.643	.090786	-7.09	0.000

Note: Dependent variable is amount of soybean sold in quintal. N=153, prob> F = 000

R-Squared = 0.9924, Adjusted R-Squared = 0.9918, \*\*\* and \*\* are statistically significant at 1% and 5% respectively. Std.Err is robust.Source: survey result

Sex of the households head Positive and significant at the 1% level of significance, it has an impact on the market's supply of soybeans.

The volume of soybeans delivered to the market increases

by 0.051 quintal if the household head is a man. This outcome is comparable to that found by [13] Cunningham et al. (2008), who found that female household heads retain their produce for household food self sufficiency whereas male



household heads sell their produce at high prices. As a result, it is anticipated that households headed by men will participate in soybean markets at a higher rate than those headed by women.

### 5.7. Membership in Cooperatives

At a 1% level of significance, it is positively and strongly correlated with the amount of soybean sales. The outcome demonstrates that, on average, the quantity of soybeans provided to the market rose by 0.05 quintal if soybean grower is a cooperative member. It might be due to the various productivity-enhancing services that cooperatives offer to their members, such as better varieties and fertilizers.

This could then assist cooperative members in producing more soybeans, increasing the amount of soybeans available on the market. Cooperatives thereby develop member relationships and increase members' understanding of the market. Smallholder farmers benefit greatly from agricultural cooperatives, according to [14] FAO (2011), including negotiating power and resource sharing that contribute to food security and poverty reduction for millions. facilitated by Smallholder farmers can bargain better contract farming terms and lower rates for agricultural inputs like seeds, fertilizer, and equipment because they are a member of a bigger group. Cooperatives also provide options that smallholder farmers cannot pursue on their own, such as assisting them in securing land rights and greater market opportunities.

### 5.8. Frequency of Agricultural Extension Contact

At a 5% level of relevance, it considerably and positively affects the market supply. According to the findings, frequent extension services lead to a 0.01 quintal increase in the supply of soybeans to the market. It increases household awareness of the application of new technology and has a favorable effect on the volume of soybean sales. Regarding cereal market participation in southern Africa, this result is comparable to those reported by Siziba [15, 16] The possibility of engaging in soybean markets is positively impacted by access to agricultural extension agents. The outcomes show how crucial upgraded technology and assistance services are for encouraging soybean market participation.

Through their stimulation of output and productivity, extension services have a favorable impact on market supply. It boosts soybean production effectiveness.

### 5.9. Distance to the Nearest Market

At a 1% significance level, it has a detrimental impact on the market supply of soybeans. The results also showed that the amount of soybeans delivered to the market increases by 0.02 quintal if the household head is closest to the market. The lower the transit costs, shorter walking distances, lower

other marketing expenses, and better access to market facilities result from nearby markets. This outcome is consistent with [17] findings that there is a direct correlation between the volume of food grain sold and the distance from the household residence to the grain market. It is comparable to Kindie's (18) study that the volume of sesame sold is adversely impacted by the distance to the closest market. Omiti (19) discovered that the adversely

## 6. Summary, Conclusions and Recommendations

### 6.1. Summary

The goal of this study was to examine the soybean value chain in the Dacha Nadi area in the Jimma zone, Oromia region, Ethiopia. More specifically, the study looked at the actors throughout the soybean value chain and their benefit shares, as well as the factors that affect how much soybean is supplied to the market. Using STATA software, the analysis was conducted using descriptive statistics, a value chain map, and an econometric model. Every family in the tested population grew soybeans. The primary input sources for the soybean growers, specifically soybean seed, were the Jimma research center and facilitator for change. Collectors bought the goods from far-off places and sold them to wholesalers and retailers in town marketplaces. Farmers and collectors supply the product to wholesalers, who then sell it to retailers.

Indirectly or directly supporting the soybean value chain are supportive governmental and non-governmental actors. Supporters and enablers of value chains perform facilitation duties such raising awareness, encouraging the development of cooperative strategies, and organizing assistance. The district agricultural office, district administrations, research center, district trade and market development, facilitator for change, and banks are the key proponents of the soybean value chain in the study areas. Input suppliers, soybean producers, wholesalers, retailers, collectors, processors, exporters, and consumers were the key value chain participants, according to the soybean value chain analysis of the research areas. In the producing season of producers' marketed supply of soybean was 4.47 quintal on average.

The market received 2.48 quintal of soybeans at the lowest price and 5.73 quintal at the highest during the production season. While traders' operating costs are significantly lower than those of farmers, their profit margin exceeds farmers'. Traders took more than 65.8% of the entire profit margin by merely purchasing from farmers and selling to customers. Farmers only received 34.2% of the profit margin despite completing all the labor and taking all the risks involved in growing soybeans.

Every stage of the soybean value chain has constraints that prevent it from developing. Low soybean prices and price volatility are two obstacles that practically all stages must

overcome.

of the product from time to time, low bargaining power of producers, limited credit availability; because of the collateral limitations of the farmers, low strength of unions and cooperatives, there is insignificant value adding activities to the product both by the producers and traders at all because of low level of training, lack of storage, lack of transport and unbalanced share of actors are the major gaps for the production and supply of soybean in the study area.

The result of the multiple linear regression model indicates that quantity of soybean produce, sex of the household head, distance to the nearest market, number of agricultural extension visit and members of cooperatives were significantly affected market supply of soybean.

## 6.2. Conclusion

Analysis of the value chain in the research area showed that the profit margin of traders was significantly higher than that of soybean farmers.

Farmers in the research area frequently produced soybeans, which can be seen as a business potential. This is due to the presence of a neighboring research facility and university, a sector that demands soybeans, a suitable climate, and cooperatives. The main barriers to the production and sale of soybean were discovered to be poor linkages with value chain players, restricted access to financing, low producer bargaining power, and low prices of non-value added products. Low profit margins were shown on the map, which deterred producers from maximizing soybean production.

## 6.3. Recommendations

The marketing of soybeans was one of the major issues in the analysis of the soybean value chain. Therefore, to solve these issues, appropriate treatments are needed. The following suggestions are made in order to boost the supply of soybeans on the market and enhance the value chain. It is essential to assist the producers in reducing transaction costs in the research area. As a result, non-governmental organizations should carefully connect producers to other chain participants and facilitators. Escalating producers participate in cooperative membership and developments of farmers marketing organization are also a good option to reduce marketing problems. Reducing unnecessary chain actors in the market, bonding producers directly to processing company, revisiting strategies of promotion of cooperatives membership should also A viable way to lessen marketing issues is to increase producer participation in cooperative membership and the growth of farmers marketing organizations. Emphasis should also be placed on eliminating pointless intermediaries from the market, connecting producers directly with processors, and reviewing the tactics for promoting cooperative membership.

Along with improving road infrastructure, increasing

farmers' access to transportation is crucial for the smooth operation of the soybean market. Soybean production is increased via agricultural extension services, which is considered to be a key component in boosting soybean yield. Therefore, the government should place a strong emphasis on connecting producers and extension services.

## Abbreviations

GTP II	Growth and Transformation Plan
NGO	Non-governmental Organizations
CSA	Central Statistical Agency
KIF	Key Informant
FGD	Focus Group Discussions
Qt/ha	Quintal per Hectare

## Author Contributions

Kumilachew Achamyelh is the sole author. The author read and approved the final manuscript.

## Conflicts of Interest

The author declares no conflicts of interest.

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