



**WOLKITE UNIVERSITY**

**SENIOR RESEARCH PROJECT ON COFFE MARKET SUPPLY CHAIN  
ANAYLSIS OF SMALLHOLDER FARMERS IN CASE OF GIDA AYANA  
DISTRICT EAST WOLLEGA ZONE, OROMIA RIGION, ETHIOPIA**

**BY**

**KENENISA WAYESSA**

**ID NO: NSR/1429/14**

**ADVISOR:**

**Mrs. Tsion**

*Submitted To Department Of Agricultural Economics ,College Of Agriculture  
And Natural Resource ,Wolkite Unversity, In Partial Fulfillment Of the  
Requirements For B.Sc.Degree In Agricultural Economics*

**APRIL, 2025**

**WOLKITE, ETHIOPIA**

## **ACKNOWLEDGEMENTS**

First and foremost I extend my heartfelt gratitude to God for His guidance, strength, and blessings throughout this journey.

I would like to express my deepest appreciation to my advisor, Mrs. Tsion, for her invaluable support, patience, and insightful guidance. Her constructive feedback, encouragement, and unwavering dedication have been instrumental in shaping this research from the initial proposal design to its final completion. I am truly grateful for the time and effort she invested in mentoring me, which has been a great source of motivation.

Lastly I extend my sincere thanks to Wolkite University's Agricultural Department for providing the opportunity and necessary resources to undertake this study. Their support has been essential in making this research possible.

## **LIST OF ABBREVIATIONS AND ACRONYMS**

ARI	Agricultural Research institute
CSA	Central Statistics Agency
ECX	Ethiopian Commodities Exchange
FAOSTAT	Food and Agriculture Organization Statistics
GDP	Gross Domestic Product
HVP	High value product
ICO	International Coffee Organization
ITC	International Trade Centre
KMs	Kilograms
N	Numbers of respondents

## Table of Contents

ACKNOWLEDGEMENTS .....	ii
LIST OF ABBREVIATIONS AND ACRONOMYS .....	iii
LIST OF TABLE .....	vi
LIST OF FIGURE .....	vii
ABSTRACT .....	viii
1. INTRODUCTION .....	1
1.1 Background of the Study .....	1
1.2 Statement of the problem .....	2
1.3. Objectives of the Study .....	3
1.3.1. General Objective .....	3
1.3.2. Specific Objectives .....	3
1.4. Research Questions .....	3
1.5 Significance of the Study .....	4
1.6 Scope and Limitation of the Study .....	5
2 .LITERATURE REVIEW .....	6
2.1 Theoretical review .....	6
2.1.1 Definition and concepts .....	6
2.1.2 Theoretical concepts .....	6
2.1.4 Value Chain Mapping and Actors .....	7
2.1.5 Market supply of agricultural commodities .....	8
2.1.6 Significance of coffee in Ethiopian economy .....	9
2.1.7 Market supply chain of coffee in Ethiopia .....	9
Coffee Production .....	9
2.2 EMPIRICAL REVIEW .....	13
2.2.1 Key Actors in the coffee market supply chain .....	13
2.2.2. Factors affecting market supply of coffee .....	14
3 .RESEARCH METHODOLOGY .....	17
3.1 Description of the study area .....	17
3.1.1 Climate .....	17
3.1.2 Population .....	17

3.2 Types and Method of data collection .....	17
3.3. Sampling Procedures and Sample Size Determination .....	18
3.4. Methods of Data Analysis In this study .....	20
3.4.1 Descriptive statistical analysis .....	20
3.4.2. Econometric Model Specification .....	20
3.5. Hypothesis and Definitions of Variables .....	21
3.5.1. Hypothesis and Definition of Variables .....	22
3.5.2. Dependent Variables .....	22
3.5.3. Independent Variables for Quantity of Coffee Supply .....	22
4. RESULTS AND DISCUSSION .....	25
4.1. Descriptive Analysis of Sampled Households' Characteristics .....	25
4.1.2 Demographic and Socioeconomic Characteristics OF Trader .....	28
4.1.3. Market supply chain analysis .....	30
4.2. Market supply chain actor and their respective roles smallholder coffee farmers .....	31
4.2.1 Analyzing challenges and opportunities of coffee production and marketing .....	33
4.2.2 Challenges/Constraints and Opportunities at Producers' Level .....	33
4.2.3 Production Challenges .....	33
4.3.1 Analysis of Coffee Market Supply Determinants: Methodological Framework .....	38
5. CONCLUSION AND RECOMMENDATIONS .....	42
5.1 Conclusion .....	42
5.2 Recommendations .....	43
6. REFERENCE .....	45
7. Appendix .....	48

## **LIST OF TABLE**

Table 1 distribution of samples household.....	19
Table 2 .distribution of samples household of traders .....	19
Table 3. Summary of type, measurement and expected sign of variables .....	24
Table 4 Sampled Households' Characteristics .....	28
Table 5. Demographic and Socioeconomic characteristics of Trader .....	30
Table 6. Challenges/Constraints and Opportunities at Producers' Level .....	35
Table 7. Marketing Challenge And Opportunities At Producers Level .....	35
Table 8. Challenge And Opportunity Traders Level .....	36
Table 9. Determinants of Farm-Level Volume Sales of Coffee (Multiple Linear Regression Estimates) .....	39

## **LIST OF FIGURE**

Figure.1.1 conceptual framework

## ABSTRACT

*This study analyzes the coffee market supply chain of smallholder farmers in Gida Ayana District. Coffee production is of immense importance to Ethiopia's economy, making up a large portion of GDP, employment and foreign exchange earnings. Smallholder farmers who account for the majority of production have to deal with systemic issues like price fluctuations, inadequate infrastructure, climate change and a lack of access to credit and markets. Using both qualitative and quantitative methods, the study integrates primary data from surveys of 91 farmers and 24 traders with secondary data to map key actors, assess supply chain dynamics, and identify determinants of market supply. The analysis was done using descriptive statistics and multiple linear regression models. The results show that the quantity of coffee produced, education level, cooperative membership, and access to credit have positive effects on their overall market supply, while distance to markets has an inverse relationship with market participation. A few of the main threats to coffee production are the increased prevalence of coffee diseases, climate variability, and lack of administrative or technical support for farmers. The opportunity is in the expanding private trader network, , and Ethiopia's reputation for quality Arabica coffee. This study calls for policy interventions to enhance financial services, infrastructure and cooperative governance. Improving market linkages, adopting sustainable practices and capitalizing on Ethiopia's genetic coffee diversity will be essential to increase smallholder incomes and global competitiveness. These interventions seek to remedy supply chain inefficiencies to pave the way for long-term economic growth and increased resilience of livelihoods of actors in Ethiopia's coffee sector.*

**KEYWORD:-** *Coffee, Supply Chain Analysis, Smallholder Farmers, Gida Ayana District, multiple liner regression*

# 1. INTRODUCTION

## 1.1 Background of the Study

Ethiopia is the homeland and the birth place for (Coffee arabica), and the world's fifth-largest exporter, the primary Arabica coffee vegetation have been cultivated here and farmers maintain to harvest the majority of the crop from wild coffee plants as they harvest for centuries. Coffee is the most important foreign total export earnings. The coffee subsector shares about 4–5% to the country's Gross Domestic Product(GDP) and creates local job opportunities In Ethiopia, (Worku,2019), 856,591.99 ha of land had been allotted for coffee production and 5,847,895.69 tones were received with average productivity of 0.683tones ha<sup>-1</sup> in 2020/21,Coffee, the backbone of Ethiopia's economy, is the most important export commodity. During2017/18 marketing year alone Ethiopia registered a record almost 917 million US dollars from coffee export (FAO, 2019) . Its contribution to the national economy in general and exports in particular (Birhe, 2010). Coffee in Ethiopia accounts for 4–5% of GDP, 10% of total agriculture production, 40% of total exports, 10% of total government revenue, and 25–30% of total export earnings (FAO, 2019).

Ethiopia is. the largest producer of coffee in Africa and the fifth in the world, next to Brazil, Vietnam, Colombia, and Indonesia, contributing to about 4.2% of the global coffee production (ICO, 2016), which is very low compared to the aforesaid countries.

Despite the abundant opportunities in the country for increasing coffee production and productivity, such as a suitable growing environment and an adequate labor force, the country's average coffee productivity (0.71 t/ha) is consistently lower than that of other coffee-producing countries, such as Brazil (0.78 t/ha), Vietnam (1.31 t/ha) and Colombia (0.76 t/ha) (FAOSTAT, 2020). This could be due to several factors, which include biotic factors (e.g., diseases and pests), climatic factors (e.g., recurrent drought and rainfall fluctuation), low soil fertility and traditional coffee management (lack and slow adoption of improved coffee varieties and agronomic practices. (Tadesse et al., 2020) About 90% of the Ethiopian coffee is produced by smallholder farmers on less than 2 ha of land by using a traditional coffee management system (Worku, 2019)

According to (Anandajaya sekeram and Berhanu, 2009) the value chain concept entails the addition of value as the product progresses from input supplies to producers and consumers.

A value chain therefore incorporates transformation and value addition of each stage in the value chain, the product changes hands through chain actors, transaction costs incurred and generally some form of value is added.

The coffee market supply chain involves several stages, from cultivation to consumption. It starts with cultivation, where coffee plants are grown in tropical climates. The roasted beans are then packaged and distributed to retailers, cafes, and other outlets. Finally, completing the journey from farm to cup. World Bank. (2021)

The region of Oromia is in 2023; Oromia remained the largest coffee producing region in Ethiopia, accounting for around 60-65% of the country's total coffee output. The main coffee growing areas in Oromia are located in the southern and south western parts of the region, including the Jimma, Borena, Guji, Coffee is a critical cash crop for smallholder farmers in Oromia, with an estimated 4-5 million households involved in coffee production. The region's high altitude, favorable climate, and rich soil make it well-suited for growing high-quality Arabica coffee varieties. It produces world class washed coffee due to its ideal soil type, climate, altitude, rainfall and temperature, for the production of high quality coffee.

Coffee is grown in the garden and planted at low densities, ranging from 1000 to 1800 trees per hectare. There are many coffee production potential areas in oromia region region, among them Gida ayana district is one of it.

## **1.2 Statement of the problem**

Coffee production is a cornerstone of the Ethiopian economy, with roughly a quarter of the population dependent on it for their livelihoods (Abu and Michael, 2015). The coffee value chain and its marketing system are crucial for sector development (Meijernik et al., 2014; Teddy, 2013). Various studies have examined Ethiopia's agricultural marketing system, focusing on coffee in particular. Connecting small-scale producers to markets is widely recognized as essential for value chain development (Alemu and Meijernik, 2010). Several studies have specifically focused on the coffee value chain in different regions of Ethiopia. For example, Mohammed (2013) analyzed the coffee value chain in Nensebo District, Solomon et al. (2016) examined factors affecting coffee market outlet performance in Jimi zone, Deselegn (2014) studied coffee marketing costs and margins in South West Ethiopia, and Hika and Anteneh (2017) analyzed the coffee value chain in East Wollega Zone Najjo district.

Even if those related studies were carried out in different part of the country, there are not enough studies that are able to provide empirical evidence for improving the market supply system of coffee and key actors involved in coffee market supply chain undertaken in the study area. Therefore, assessment of market supply is an essential prerequisite to find out the likely reasons that limit the overall performance of market supply chain and marketing of coffee and come up with specific workable solutions. It is for this very critical reason that the study is designed and conducted in Gida ayana district. Consequently, the study examined the different key actors involved in the coffee market supply chain within the study area and describe their respective roles and responsibilities and the research was identified and evaluate the various factors that influence the market supply of coffee by small-scale producers in the Gida Ayana District.

### **1.3. Objectives of the Study**

#### **1.3.1. General Objective**

The overall objective of this study is to analyze coffee market supply chain in the case of Gida Ayana District

#### **1.3.2. Specific Objectives**

- To identify the key actors involved in the coffee market supply chain and their respective roles in the study area.
- To examine the factors that affect the market supply of coffee by the small-scale producers in the study area.
- To analyse challenges and opportunities of coffee production and marketing

### **1.4. Research Questions**

- ✚ Who are the key actors involved in the market supply chain in the study area, and what are the specific functions and roles of each actor along the chain?
- ✚ What are the primary factors that affect the market supply of coffee by farmers in the study area?
- ✚ What are challenges and opportunities at producers' and trades' level?

## 1.5 Significance of the Study

- ❖ Ethiopia, renowned as the birthplace of Arabica coffee, holds a pivotal role in the global coffee market. This study on the coffee supply chain in Gida Ayana District, East Wollega Zone, is critical for multiple stakeholders due to the following reasons:
- ❖ **Economic Contribution:** Coffee is Ethiopia's primary export commodity, contributing 4–5% to GDP and supporting millions of livelihoods. Enhancing the efficiency of its supply chain can directly boost foreign exchange earnings, stabilize rural incomes, and strengthen national economic resilience.
- ❖ **Smallholder Farmer Empowerment:** Over 90% of Ethiopia's coffee is produced by smallholders facing challenges such as price volatility, climate change, and poor infrastructure. This study identifies actionable strategies to improve their market access, bargaining power, and adoption of sustainable practices, thereby enhancing their livelihoods.
- ❖ **Policy and Institutional Relevance:** The findings provide evidence-based insights for policymakers and institutions like the Ethiopian Coffee and Tea Authority. Recommendations on cooperative strengthening, infrastructure investment, and financial service accessibility can guide reforms to stabilize the sector and align policies with farmers' needs.
- ❖ **Value Chain Optimization:** By mapping key actors (farmers, cooperatives, traders, ECX, exporters) and analyzing factors like education, credit access, and market distance, the study highlights inefficiencies in the chain. This enables targeted interventions to reduce transaction costs, improve coordination, and ensure equitable value distribution.
- ❖ **Climate Resilience and Sustainability:** The study underscores the threats of climate change and diseases like Coffee Berry Disease. Promoting climate-smart practices and improved processing techniques can mitigate risks, ensuring long-term productivity and environmental sustainability.
- ❖ **Global Competitiveness:** . By addressing gaps in technology adoption, market linkages, and quality control, this research aids Ethiopia in leveraging its unique coffee heritage to compete effectively in international markets.
- ❖ **Academic and Developmental Impact:** The mixed-methods approach (descriptive and econometric analysis) offers a model for future research on agricultural value chains. It also serves as a reference for NGOs and development agencies designing programs to uplift rural economies through coffee sector development.

## **1.6 Scope and Limitation of the Study**

The scope of this study focuses on analyzing the coffee market supply chain of smallholder farmers in Gida Ayana District, East Wollega Zone, Oromia Region, Ethiopia. It examines the key actors in the coffee market supply chain, their roles, and the factors influencing coffee market supply. The research includes both qualitative and quantitative data, utilizing surveys and econometric models to assess the market dynamics. However, the study is limited to smallholder farmers and does not extensively cover large-scale commercial coffee producers or global market fluctuations. Additionally, while it highlights challenges such as price fluctuations, infrastructure limitations, and climate-related issues, it does not provide an in-depth financial analysis of coffee value chain profitability. The findings are specific to the study area and may not be fully generalizable to other coffee-producing regions in Ethiopia.

## 2 .LITERATURE REVIEW

### 2.1 Theoretical review

#### 2.1.1 Definition and concepts

**Market Supply Chain** – The sequence of processes and actors involved in producing, processing, and distributing coffee from farmers to consumers (ICO, 2020).

**Value Chain** – A framework describing activities from production to consumption, including input supply, processing, and marketing, to add value at each stage (Kaplinsky & Morris, 2001).

**Market Access** – Smallholder farmers’ ability to sell coffee in local and global markets, influenced by infrastructure, price stability, and trade policies (World Bank, 2017).

**Smallholder Farmers** – Farmers cultivating coffee on small plots often facing productivity, financing, and market challenges (FAO, 2018).

**Price Fluctuation** – Coffee price variations due to demand, global trade, production levels, and policies, impacting farmer income stability (ICO, 2020).

**Infrastructure** – Physical facilities (roads, storage, processing) supporting the coffee supply chain; poor infrastructure leads to post-harvest losses (USAID, 2019).

**Sustainable Coffee Farming** – Practices maintaining productivity while minimizing environmental harm and ensuring long-term farmer profitability (Perfecto et al., 2005).

**Extension Services** – Programs providing farmers with training, knowledge, and technologies to improve productivity and market competitiveness (Anderson & Feder, 2004)

#### 2.1.2 Theoretical concepts

Market supply chain analysis involves evaluating the various components and processes involved in the supply chain of a specific market. This type of analysis helps businesses understand the flow of goods from producers to consumers, identify potential inefficiencies, and optimize operations for better performance (Kaplinsky and Moris, 2001)

Market Supply refers to the total quantity of a product or service that all producers in a market are willing and able to sell at various prices over a given period. It is a fundamental concept in economics, particularly in the study of supply and demand(Schmitz 2018)

**value chain actors** are those involved in producing, processing, trading or consuming a particular agricultural product. They include direct chain actors which are commercially in the chain producers, traders, retailers, consumers and indirect actors which provide financial or non-financial support service, such as bank and credit agencies, business service providers, government, researchers and extensions (KIT et al., 2006).

According to Schmitz (2018) it is taken to mean a group of companies working together to satisfy market demands. It involves a chain of activities that are associated with values to a product through the production and distribution process of each activity. According to Dolan and Humphery (2000) value chain is becoming an increasingly important component in the delivery of high value product (HVP) in both developed and developing countries. The establishment of efficient value chain necessities the creation of relationship networks, skills and coordination mechanisms to manage the flow of products between intermediaries and ensure that quality specification are met.

According to (Anandajayasekeram and Birhanu, (2009), the value chain concept entails the addition of value as the product progresses from input suppliers to producers and consumers. A value chain, therefore, incorporates productive transformation and value addition at each stage of the chain. At each stage in the value chain, the product changes hands through chain actors, transaction costs are incurred, and generally, some form of 8 value is added. According to their conclusion, value addition results from diverse activities including bulking, cleaning, grading, and packaging, transporting, storing and processing.

According to FAO (2015) a 'value chain 'in agriculture identifies the set of actors and activities that bring a basic agricultural product from production in the field to final consumption, where at each stage value added to the product. A value chain can be a vertical linking or a network between various independent business organizations and can involve

#### **2.1.4 Value Chain Mapping and Actors**

A value chain map presents, in graphical form, the major actors involved in a targeted value chain (Frank and Henry, 2017). It depicts the different supply channels that transform raw

materials into finished products and distribute them to final consumers, as well as the various markets or market segments where products are sold. Draft value chain maps can be developed using information provided by key informants and then refined as more data is gathered.

Market supply chain actors are those directly or indirectly involved in supplying inputs, producing, processing, marketing, and consuming agricultural products (Getnet, 2009; KIT et al., 2006). Direct actors include rural and urban farmers, cooperatives, processors, traders, retailers, cafes, and consumers. Indirect actors provide financial or non-financial support services, such as credit agencies, business service providers, government, researchers, and extension agents (KIT et al., 2006). Actors in the value chain may include input suppliers, producers, collectors, assembly traders, wholesalers, retailers, and processors (Kaplinsky and Morris, 2001).

### **2.1.5 Market supply of agricultural commodities**

The market supply refers to the amount actually taken to the markets irrespective of the needs for home consumption and other requirements. Whereas, the marketed surplus is the residual with the producer after meeting the requirement of seed, payment in kind, and consumption by the farmer (Joshi et al., 2018).

Marketable Surplus is a theoretical ex-ante concept which represents the surplus which the farmer producer has available with himself for disposal once the genuine requirements of the farmer's family consumption, payment of wages in kind, feed, seed and wastage have been met. Marketed Surplus as compared to Marketable Surplus is a practical ex-post concept and refers to that part of the marketable surplus which is marketed by the producer, i.e., not only the part which is available for disposal but that part which is made available to the market or to the disposal of the non-farm rural and urban population (Subash et al., 2019).

The concept of "Marketable Surplus" is subjective because the feature of retention of the farmer is a matter of subjective guess. The concept of "Marketed Surplus", on the other hand, is objective, because it refers specifically to the marketed amount, i.e., to the actual quantity

### **2.1.6 Significance of coffee in Ethiopian economy**

Ethiopia is endowed with a good production environment for growing coffee with a combination of appropriate altitude, temperature, rainfall, soil type and PH. And also Ethiopia is the center of origin for coffee Arabica, the countries possess a diverse genetic base for this Arabic coffee with considerable heterogeneity. Ethiopia produces a range of distinctive Arabica coffee and has considerable potentials to sell a large number of especially coffee. Most coffee production is localized in the southern and south-west parts of the country. The eastern part (Harar) produces a premium coffee that is highly valued in the international market, and especially so in Middle eastern countries, but the quantity that are produced are relatively low.

As the economy depends on agriculture, which accounts for about 45%of GDP, 90% of export and 80% of total employment, as it is one the most important commodities to Ethiopia economy. Coffee is Ethiopia's most important export crop, accounting for 22 percent of Ethiopia's commodity exports in 2013/14 (NBE, 2014). Ethiopia is the biggest coffee exporter in Africa, accounting for 3 percent of global coffee trade (ICO, 2014). It is estimated that coffee is cultivated by over 4 million primarily smallholder farming households in Ethiopia, and comprises an important source of livelihood for a large number of these often poor producers (CSA, 2013)

### **2.1.7 Market supply chain of coffee in Ethiopia**

#### **Coffee Production**

Ethiopia is the largest producer and exporter of coffee in Africa, accounting for about 4% of the global coffee production (International Coffee Organization, 2022). The country's coffee is renowned for its distinctive flavors, which can be attributed to the diverse growing regions, soil conditions, and traditional processing methods. Coffee production in Ethiopia is primarily carried out by smallholder farmers, with an estimated 4 million households involved in coffee cultivation (Minten et al., 2021).

Ethiopia's coffee production is concentrated in the southwestern and southern regions of the country, particularly in the Oromia and Southern Nations, Nationalities, and Peoples' (SNNP) regions. These regions account for the majority of the country's coffee output, with the Sidama, Gedeo, and Yirgacheffe zones being renowned for their high-quality specialty coffees (Petit, 2007). The main coffee-growing areas are characterized by high elevations,

abundant rainfall, and favorable soil conditions, which contribute to the unique flavor profiles of Ethiopian coffee.

Smallholder farmers in Ethiopia typically cultivate coffee on small plots of land, often less than one hectare in size. These farmers use traditional farming methods, relying on manual labor and limited use of modern inputs such as fertilizers and pesticides. The lack of access to improved agricultural practices and technologies has resulted in relatively low yields, with the national average coffee yield being around 700 kilograms per hectare (Minten et al., 2021).

### **Coffee Harvesting and Processing**

Coffee harvesting in Ethiopia is a labor-intensive process, often involving manual picking of ripe coffee cherries. The processing of coffee can be done using either the wet or dry method, depending on the region and the preferences of the farmers.

The wet processing method, which involves the removal of the pulp and fermentation, is more commonly used in the central and southern regions of the country. This method is known to produce a cleaner, brighter, and more consistent cup profile. The wet processing method typically involves the following steps: (1) pulping, where the skin and pulp of the cherry are removed; (2) fermentation, where the remaining mucilage is removed through natural enzyme action; and (3) drying, where the beans are dried in the sun or using mechanical dryers (Petit, 2007).

The dry processing method, where the coffee cherries are sun-dried with the skin and pulp intact, is more prevalent in the eastern and northern regions. This method is generally considered to produce a more complex, earthy, and wine-like flavor profile. The dry processing method involves the following steps: (1) drying the coffee cherries in the sun for 2-3 weeks; (2) removing the dried skin and pulp through mechanical hulling; and (3) further drying and sorting the green beans (Tafesse, 2020).

### **Coffee Marketing and Trade**

After processing, the coffee beans are sold to local traders, cooperatives, or exporting companies. Ethiopia has a unique coffee auction system, where the majority of the country's coffee is sold through the Ethiopian Commodity Exchange (ECX). The ECX provides a centralized platform for the trading of coffee and other agricultural commodities, ensuring transparency and fair prices for producers (Teshome etl, 2015).

The ECX system works as follows: coffee farmers or cooperatives deliver their coffee to one of the ECX's warehouses, where it is inspected, graded, and stored. The coffee is then auctioned off to local traders, exporters, or processors, who bid for the lots. The auction process ensures that the coffee is sold at the prevailing market price, which is determined by factors such as quality, supply, and demand (Damte and Negash ,2020).

In addition to the ECX, Ethiopia has been actively promoting its specialty and fine-grade coffees, which command higher prices in the international market. These specialty coffees are often sold directly to international buyers or through specialty coffee traders, bypassing the ECX system. The promotion of specialty coffees has been a key strategy for Ethiopia to increase the value captured by producers and to differentiate its coffee in the global market (Minten et al., 2014).

### **Coffee Export and Consumption**

Ethiopia exports a significant portion of its coffee production, with the European Union, United States, and Saudi Arabia being the largest importers. In recent years, the country has exported around 60-70% of its total coffee production (Gebreselassie & Bekele, 2018).

The coffee export trade in Ethiopia is dominated by a small number of large exporters, many of whom are vertically integrated and have established direct relationships with international buyers. These exporters play a crucial role in linking Ethiopian coffee producers to the global market and ensuring the consistent supply of high-quality coffee (Tafesse, 2020).

In recent years, there has been a growing domestic consumption of coffee within Ethiopia, driven by the country's expanding middle class and the increasing popularity of coffee shops and cafes. This trend has been supported by the government's efforts to promote coffee consumption and establish a vibrant domestic coffee culture (Gebreselassie & Bekele, 2018).

### **2.1.9 Major Problems In Ethiopia Coffee Production And Marketing Chain**

Coffee, Ethiopia's largest export crop is the backbone of the Ethiopian economy. However, Ethiopia has not yet fully exploited its position as the producer of some of the best coffees in the world. The major coffee production constraints are: lack of competitiveness, lack of infrastructure, in adequate access to services, low value addition, in adequate technology transfer and research, competition of khat and rainfall variability. Also Price volatility, Poor accesses to market, little market promotion and incentive mechanism, and low price were

reported to be the major problem of coffee marketing in Ethiopia.(ISSN 2422-845 an international peer-review, vol.67,2020). Pest and Disease Outbreak: Diseases like Coffee Berry Disease (CBD) and pests such as the Coffee Berry Borer (CBB) can cause substantial crop losses if not effectively managed( International Journal of Agricultural economics 2020

According to Tadesse (2003) deforestation and change in land use are threatening coffee forest gene pools in Ethiopia. This has been aggravated with the recent coffee price crisis on the world market as a result of market liberalization. Farmers are shifting their coffee farm or forest to other monoculture crop production. Tesfu (2012) also added deforestation and land degradation, diseases, predominant traditional production, failure of using appropriate coffee technologies, inadequate services (credit, inputs, equipments), and lack of sustainability and competitiveness in the coffee sector are challenging coffee production and quality improvement in Ethiopia.Lack of improved seed varieties is one of the most important problems in coffee production. Unlike other crops, there is no any public and/or private sectors responsible to produce and market coffee seeds( Ewentu, 2022) climate change and variability present significant challenges to coffee productionin Ethiopia. Erratic weather patterns, unpredictable rainfall, and rising temperatures candisrupt cultivation practices and affect coffee yields.

## 2.2 EMPIRICAL REVIEW

### 2.2.1 Key Actors in the coffee market supply chain

Ethiopia, known as the birthplace of coffee, has a complex and multi-faceted coffee value chain that involves several key actors, each playing a crucial role from production to export. Smallholder farmers are the backbone of Ethiopia's coffee industry, responsible for approximately 95% of the country's coffee production (ICO, 2020). These farmers, who typically own less than 2 hectares of land, cultivate a variety of coffee types, including the highly prized Arabica coffee known for its unique flavor profiles (Minten et al., 2014). Coffee farming is a primary source of income for over 15 million Ethiopians, though their earnings vary significantly based on factors such as farm size, yield, and market conditions. However, smallholder farmers face considerable challenges, including limited access to credit, modern farming inputs, and extension services, which restrict their productivity and income potential (TechnoServe, 2013). Additionally, climate change poses a significant threat to coffee production, with studies indicating that rising temperatures and erratic rainfall patterns could adversely affect yields (Davis et al., 2012).

**Cooperatives and unions** also play a vital role in the coffee value chain by aggregating coffee from smallholder farmers and facilitating better market access. These cooperatives provide essential services such as training and financial support and help in exporting coffee directly to international markets, often securing better prices for their members (Kodama, 2007). For instance, members of the Oromia Coffee Farmers Cooperative Union receive prices that are, on average, 10-20% higher than non-members (Kodama, 2007). However, some cooperatives struggle with issues related to weak management and governance, which can affect their efficiency and reliability (Francesconi & Heerink, 2011). Moreover, they face competition from private traders who offer immediate cash payments, making it challenging to retain farmer loyalty (Kodama, 2007).

**Private traders**, known as "collectors" or "sebsabies," act as market intermediaries by purchasing coffee cherries or beans from farmers and selling them to processors or exporters. These traders are crucial in linking farmers to the market and often influence the prices that farmers receive (Minten et al., 2014). While their presence can increase market efficiency, it can also lead to price volatility and potential manipulation (TechnoServe, 2013). The

regulatory environment impacts their operations, especially with changes in export policies and trade regulations (Minten et al., 2014).

**Processors**, including wet and dry mills, add significant value to coffee by processing it into parchment and green coffee beans, which is essential for maintaining quality and meeting export standards (TechnoServe, 2013). Effective processing can enhance the quality and market value of coffee, with properly processed coffee fetching prices up to 50% higher (TechnoServe, 2013). However, inadequate processing infrastructure and technology can hinder efficiency and quality, and high production costs, including labor and energy, can reduce profitability (Minten et al., 2014).

**Exporters** play a crucial role in selling Ethiopian coffee to international markets, leveraging established relationships with global buyers (ICO, 2020). In 2020, Ethiopia exported approximately 4 million bags of coffee, underscoring the importance of exporters in achieving this volume (ICO, 2020). However, exporters face significant challenges, including global market volatility, which can lead to fluctuating prices and changing demand patterns.

Finally, the **Ethiopian government and regulatory bodies**, such as the Ethiopian Coffee and Tea Authority, are essential actors in the coffee value chain. They set policies and regulations governing the sector, including quality standards and export regulations, and support the industry through training, research, and development programs (ICO, 2020).

### **2.2.2. Factors affecting market supply of coffee**

Majority of studies were conducted on factors affecting market supply of coffee in different parts of Ethiopia by using multiple linear regression models. Some of such studies are presented below together with their respective area and time of conduct.

Wendmaginegn (2014) identified that the major factors that affect market supply of coffee by using multiple linear regression analysis in Dale District of SNNPRS. The result of OLS regression model analysis pointed out that eight variables namely sex of the household head, education level of household head, quantity of coffee produced, access to extension service, price of coffee, distance to the nearest market, household non-farm income and access to market information were found to be significantly and positively affecting the market supply of coffee at household level. However, distance to the nearest market and household non-farm income affect market supply of coffee negatively in the area of study.

Bizualem et al. (2015) used multiple linear regressions to analyze marketed surplus of coffee by smallholder farmers in Jimma zone, Ethiopia. The result of OLS regression showed that: sex of household head, coffee farming experience, access to credit, adequacy of extension services, attractiveness of coffee price, cooperative membership and non/off farm income are factors significantly and positively affecting marketed surplus of coffee in the area specified.

Jemal (2013) conducted a study on coffee value chain analysis in Meta district, East Hararghe zone of Oromia, Ethiopia. Using multiple linear regressions, he identified that years of farming experience, extension contact, market information and land holding positively affect market supply of coffee in the district. Zekarias et al. (2012) conducted a study on determinants of forest coffee market supply in South Western Ethiopia. Result of multiple linear regression models pointed out that price, educational level of household, transportation cost and level of production have significant impact on the market supply of the coffee in the study area.

Elias(2005)conducted study on determinants of marketed supply of sun dried coffee and identified that cost of farm labor, price of sun dried coffee and red cherry, distance to nearest market of coffee plantations, average age of plantations and availability of extension service are factors affecting market supply of sub dried coffee in the area of study. Mohammed (2013) identified the major factors affecting market supply of coffee in Nensebo district of Oromiya region using 2SLS regression econometric model. The results of his econometric analysis shows that output, access to market information, family size and distance to market as the main factors affecting coffee supply to the market. Family size and market distance affects the quantity supply negatively.

## 2.3 Conceptual Framework

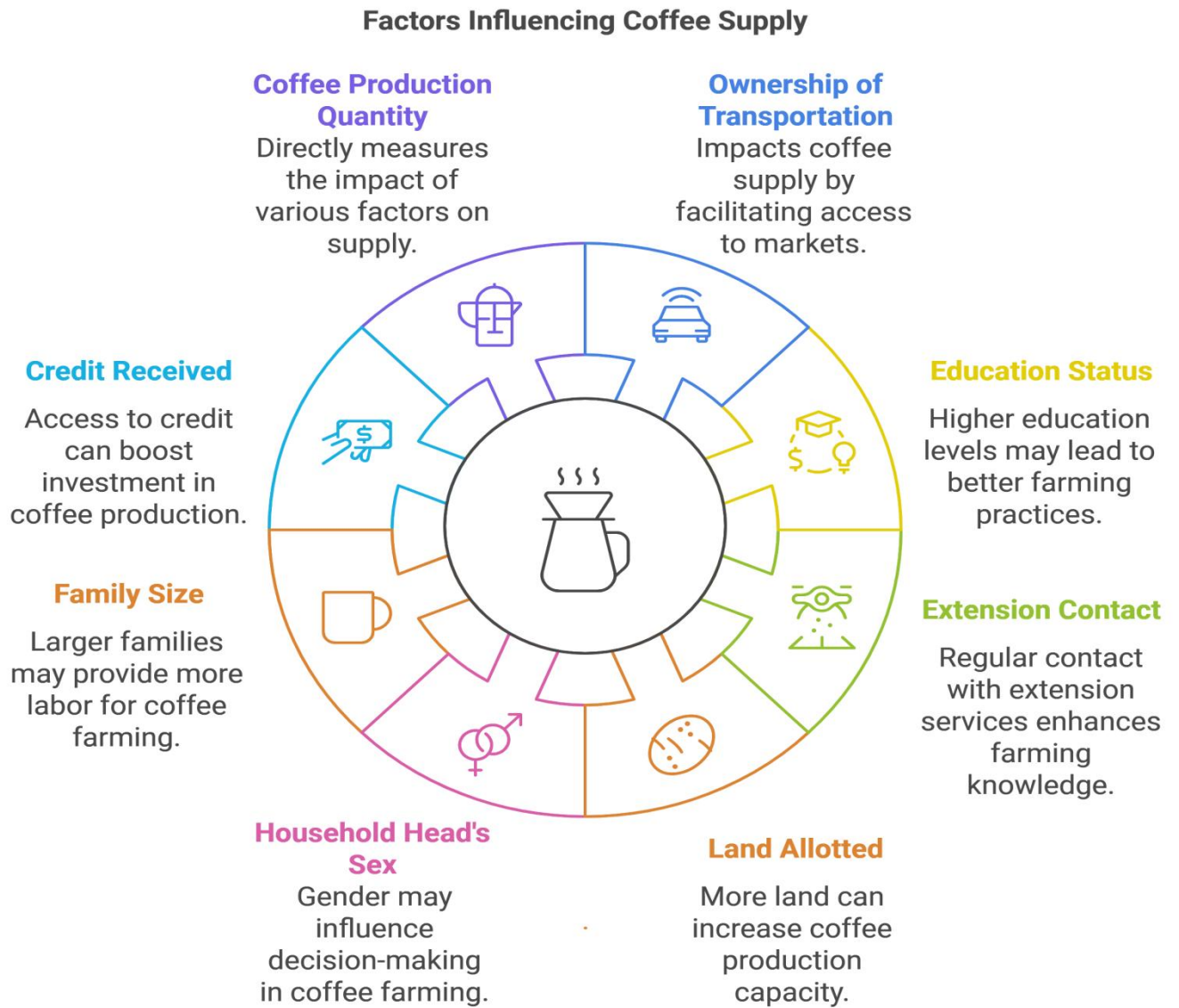


Figure 1.1 conceptual framework

## **3 .RESEARCH METHODOLOGY**

### **3.1 Description of the study area**

This study was conducted in Gida Ayana district found in East Wollega zone of Oromia National Regional State. It is located about 440 and 115 km away from Addis Ababa (capital city of Ethiopia), and Nekemte (the zonal capital of East Wollega), respectively. It is one of the 17 districts of East Wollega Zone, geographically located at 09 0 30' 30" N; 036 0 29' 28" E. It is bordered by Guto-Gida and Sibulire districts in the South, Ebantuu and Limu district in the West, Beneshngul Gumuz Regional State in the North, and Kiremu and Abe Dongoro in the East. Gida Ayana district is composed of 22 rural kebeles and 6 urban kebeles (GAoANRM, 2019). Gida Ayana district has area coverage of 183,063.73 hectares of land out of which 65% is arable land, 12.9% rangeland, 19.5% forest, irrigated and wetland 1.2%, and the remaining 3.4% is considered unusable..

#### **3.1.1 Climate**

The climate lies between two ecological zones. Woina Dega (mid altitude) 51 % and kola (low land) 49 % .The mean annual rain fall is estimated at about 1,600 mm (ranging from 1000 to 2000) . The average annual air temperature is around 25 co in the day time .In most of the cases April to September is the rainy period of the year in the area.

#### **3.1.2 Population**

The district has a total of 20,577 households with the population size of male 18,124 (88.2%), female 2,453 (11.9%) and total population is 142,408. Out of these populations 133,274 (78.1%) are living in the rural and the rest 38,711 (21.9%) are living in urban area

### **3.2 Types and Method of data collection**

The study used both qualitative and quantitative types of data, and cross-sectional data was also used for this study. Qualitative data was expressed in terms of words, symbols, and verbal forms, whereas quantitative data was expressed in terms of numbers. The study used

both primary and secondary sources of data. The main instruments of data collection for this study were questionnaires and interviews.

Primary data was collected from the respondents who had the potential to provide data through interviews and questionnaires. Secondary data was collected from different sources, such as existing documents, websites, written documents, and journals that contained information about the issues, as well as reports from the Woreda agricultural office.

### **3.3. Sampling Procedures and Sample Size Determination**

The study employed a three-stage stratified sampling technique to draw an appropriate sample. Out of the 17 districts in East Wollega, Gida Ayana was purposively selected based on its coffee production capacity and the concentration of coffee cooperatives.

From the 31 coffee-producing kebeles (the smallest administrative unit) in the Gida Ayana district, four rural kebeles were purposively selected based on their coffee production potential.

The households in the selected kebeles were stratified based on their membership status in coffee cooperatives. A total of 91 households were randomly and proportionally selected from the identified rural kebeles total producers 808 population

#### Sample Size Determination

The sample size for the study was determined using the simplified formula provided by Yamane (1967).  $n = N / (1 + N(e^2))$

$N=808$

So , $n=91$

Where:

$n$  = sample size for the research

$N$  = total number of households in the selected coffee-producing kebeles

Accordingly, the required sample size was identified at 95% confidence level and level of precision

This three-stage stratified sampling approach, combined with the appropriate sample size determination, were ensured that the study captures a representative sample of the coffee producers, traders, and local processors in the study area.

Sample distribution of producers across kebele

kebele	popul .	sampled
Lalistu:	231	26
Meti	204	23
Gaferso	186	21
Andode:	186	21

**Table 1 distribution of samples household**

**Sample distribution of trades**

Traders	Sampled	
Collectors (Sebsabi)		3
Suppliers (Akrabi)		10
Retailers		7
C.Coop		2
LSPIs		2

**Table 2 .distribution of samples household of traders**

### **3.4. Methods of Data Analysis In this study**

#### **3.4.1 Descriptive statistical analysis**

Value chain analysis and econometric tools were used to analyze the empirical data collected. Descriptive statistics such as mean, standard deviation, range, frequency, and percentage were applied to describe the characteristics of the respondents.

This method of data analysis involved the use of ratios, percentages, means, variances, and standard deviations to describe the socioeconomic and demographic characteristics of sample producers and traders. Additionally, t-tests and chi-square tests were used to determine whether there were significant mean and percentage differences between two groups of households in terms of their socioeconomic characteristics. In the econometric part, multiple were used.

#### **3.4.2. Econometric Model Specification**

Econometric models applied in this study were multiple linear regression models.

##### **Multiple Linear Regression (MLR)**

To study the factors affecting coffee market supply in the study area, the study employed a multiple linear regression (MLR) model. The use of MLR was justified as all the sampled coffee producers (small-scale farmers) participated in coffee marketing.

Multiple linear regression is a statistical technique that uses several explanatory variables to predict the outcome of a response variable. The goal of MLR was to model the relationship between the explanatory and response variables. In the context of this study, the market supply of coffee was the dependent variable, and the various factors affecting coffee supply were the explanatory variables.

The MLR model was based on the least squares concept, where the sum of squares of differences between the observed and predicted values was minimized. This method was widely used in agricultural economics research to understand the effects of different factors on the market supply of agricultural products.

The general model equation for the MLR can be specified as follows:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki} + U_i$$

Where:

$Y_i$  is the quantity of coffee supplied (the dependent variable)

$\beta_0$  is the intercept term

$\beta_1, \beta_2, \dots, \beta_k$  are the coefficients of the explanatory variables

$X_1, X_2, \dots, X_k$  are the explanatory variables

$U_i$  is the disturbance term (error)

The hypothesized explanatory variables (X) to be included in the model are:

X1: Access to market information

X2: Education level of the household head

X4: Size of land holding

X5: Sex of the household head

X6: Household size

X7: Amount of credit received

X8: Quantity of coffee produced

X9: Membership in coffee cooperative

X10: Frequency of extension contact

### **3.5. Hypothesis and Definitions of Variables**

In order to identify factors influencing market supply of coffee and coffee cooperative membership decision in the area of study, both continuous and discrete variables are hypothesized based on economic theories and the findings of different empirical studies. Accordingly, in order to investigate the determinants of mentioned dependent variables, the following variables were assumed.

### **3.5.1. Hypothesis and Definition of Variables**

#### **3.5.2. Dependent Variables**

Quantity of Coffee Supplied (QSUP): It is a continuous dependent variable used in the multiple linear regression model equation. The actual quantity of coffee supplied in production season by individual households to the market, measured in quintal..

#### **3.5.3. Independent Variables for Quantity of Coffee Supply**

Sex of the Household Head: Is a dummy variable that takes a value of 1 if the household head is male and 0 otherwise. In mixed farming system, both men and women take part in crop production and management. Sex is determining factor in different agricultural production and marketing decision of rural households of Ethiopia.

Education: It is a continuous variable measured in terms of years of formal schooling that the household head has attended. Education plays an important role in the adoption of innovations/new technologies. Furthermore, education is also believed to improve the readiness of the household to accept new idea and innovations, and get updated demand, supply as well as price information, which in turn enhances producers' willingness to produce more and increase coffee market entry decision and volume of sale.

Frequency of Extension Contact (Service): Is a continuous variable which is frequency of contact with extension workers i.e. for how many times farm family contacted with extension agents during the crop year. Different studies confirmed the existence of relationship between extension contact and market supply of different agricultural crops in general and of coffee particularly.

Size of Land Allotted for Coffee Production: Is a continuous variable which refers to the proportion of total land employed for coffee production measured in hectare. Land is important factor of production which highly determines agricultural productivity; and also as producers employ more land, they produce more and are highly likely to supply more keeping other factors constant.

Family Size: It is a continuous variable referring to number of family members in the household. Family is an important source of labor supply in rural areas. It is expected that

households with large family members have better advantage of being able to use labor resources at the right time, particularly during peak harvesting period.

**Coffee Farming Experience:** Is a continuous variable measured in number of years. A household with better experience in coffee farming and processing is expected to produce more amounts of coffee than the one with less experience and, as a result, is expected to supply more amounts of coffee to market.

**Amount of Credit Received:** This is a continuous variable which refers to the amount of credit taken by an individual household for coffee production purposes measured in birr. Credit is a key financial instrument to break low level of production and marketing problems which enhance the financial capacity of the farmers to purchase inputs, thereby increasing production and market share.

**Quantity of Coffee Produced:** It is a continuous variable dealing with total amount of coffee produced by households in production season. Most of the time, quantity produced determines the amount of commodity to be consumed as well as to be marketed because producing households adjust their plan accordingly.

**Distance to the Nearest Market:** It is a continuous variable and is measured in km by which farmers are far from the market. If the farmer is located closer to the market, the lesser would be the transportation cost and time spent to travel and vice versa.

**Membership to Coffee Cooperative:** It is a dummy variable and takes the value of 1 if the household is member of coffee cooperative and 0 otherwise. Cooperatives are expected to improve understanding of members about market and strengthen the relationship among the members.

**Non/Off-Farming Income:** It is a continuous variable measured in birr dealing with income obtained from non-farming activities or income out of own farm generated by the household head. This income may strengthen farming activity or reluctant to produce coffee to generate money from coffee rather than getting income from other activities.

**Ownership of means of transportation:** It is a dummy variable which takes a value of 1 if the household owned transportation facility and 0 otherwise. The availability of transportation facilities helps farmers to supply their product from long distance and remote area to the

available market easily. In case of this study, it is expected to have positive effect on market supply of coffee.

Summary of type, measurement and expected sign of variables

Variables	Types	Measurement	Sign(expected)
<b>Dependent Variable</b>			
Volume of supply of coffee	Continuous	Quintal	
<b>Independent variables</b>			
Ownership of means of transportation	Dummy	1 for HH having means of transportation and 0 otherwise	+
Education status of HH head	Continuous	Number of schooling years	+
Extension contact	Continuous	Number	+
Land allotted for coffee	Continuous	Hectare	+
Sex of the household head	Dummy	1 for male and 0 for female	+
Family size	Continuous	Number	+
Amount of credit received	Continuous	Birr	+
Quantity of coffee produced	Continuous	Quintal	+
Distance to nearest market	Continuous	Km	-
Membership to coffee Cooperative	Dummy	1 if the farmers are members and 0 otherwise	+
Coffee farming experience	Continuous	Years	+
Non/off farm income	Continuous	Birr	+

**Table 3. Summary of type, measurement and expected sign of variables**

## 4. RESULTS AND DISCUSSION

This chapter presents the study findings discussed under different sections. The section starts with description of demographic and socio economic characteristics of sampled coffee producers. Following this, different aspects related with coffee market analysis are incorporated and finally econometric result of the study, specifically factors affecting market supply of coffee. From the collected sample data, descriptive statistics of the household characteristics with respect to socio-economic and institutional variables were assessed and the following results were obtained.

### 4.1. Descriptive Analysis of Sampled Households' Characteristics

#### **Categorical variables**

**Sex** of the Head of Household of the 91 respondents sampled, 82.4% are male-headed households and 17.6% are female headed households. 82.5% of households are male-headed among members 82.4% male-headed among non-members households and 17.5% are female-headed among members 17.6% female-headed members households in terms of group composition.

**Religion of Sampled Households** In terms of religious composition, 70.3% of respondents in the sample are Protestant, 13.2% are Muslim, 6.6% are Catholic and 9.9% are adherents of Orthodox Christianity. The two groups' members include a majority of Protestant (67.5% members, 72.5% non-members). Muslim respondents are 20% of member respondents and 7.8% of non-member respondents. Catholicism is present among 5% of members and 7.8% of non-members, while Orthodox Christianity is followed by 7.5% of members and 11.8% of non-members.

**Marital Status** The analysis of marital status reveals that 76.9% of the total sample is married, 3.3% is single, 12.1% is divorced, and 7.7% is widowed. Among cooperative members, 75% are married, 12.5% are divorced, and 12.5% are widowed. Non-members include 78.4% married, 5.9% single, 11.8% divorced, and 3.9% widowed.

**Ownership of Transportation Facility** Out of the 91 sampled households, 62.6% own a transportation facility, while 37.4% do not. Among cooperative members, 85% have their own means of transportation, compared to only 45.1% of non-members.

**Use of Credit and Amount of Credit Received** The survey results indicate that 71.4% of sampled households use credit services, while 28.6% do not. Among cooperative members, 82.5% are credit users, compared to 62.7% of non-members. The mean credit received by sampled households is 2,700 Birr, with a standard deviation of 2,319 Birr. On average, member households received 3,165 Birr, whereas non-members received 2,165 Birr.

### **Continuous Variables**

**Age of Household Head:** Sampled household heads are 50.2 years old on average (SD: 6.03). Members have an average age of 50.99 years, whereas nonmembers have an average age of 41.82 years.

**Family Size:** Sampled households have an average family size of 4 (1) The household sizes of members and non-members are similar.

**Education (Maximum Formal Grade Completed):** The mean maximum level of education attained among the sampled respondents is 4 with a standard deviation of 2. Members have a mean education level of grade 3; for non-members the mean is also grade 3.

**Average farming experience** is 23.3 years after 23.3 years in the sampled households (SD: 6.203). Members are, on average, farmers for 21.73 years and non-members 16.2 years.

**Distance to Nearest Market:** Sample households have a mean distance of 4.3 km (sd = 0.9) to the nearest market. The members of the cooperative are on a distance of average of 3.68 km from the market, whereas non-members reside at 4.05 km.

**Distance from Coffee Cooperative ;**Overall, the mean distance from the cooperative collection point for sampled households is 1.03 km (s.d 0.24). There is a distance of: non-member (1.69 km) - member (0.68 km).

**Coffee Area:** Average area under coffee for sampled households is 2.1hectares (0.73sd) Members of the cooperative allocate an average of 2.4 hectares and non-members 1.73 hectares.

Off/Non-Farm Income: Average off/non-farm income across sampled households = 1,375 Birr; s.d. = 2,583. Members earn on average at least 2,418.99 Birr and non-members earn 330 Birr.

**No of Ext Contact/month:** Sample Households receive on average 1.98 extension visits per month (s.d 0.6). Members have an average of 2.2 visits, and non-members have 1.76 visits.

Categorical Variables:

<i>Variables Category</i>	<i>Members (40)</i>	<i>Nonmembers (51)</i>	<i>Total sample (91)</i>
Sex			
Male	33 (82.5%)	42 (82.4%)	75 (82.4%)
Female	7 (17.5%)	9 (17.6%)	16 (17.6%)
Religion			
Protestant	27 (67.5%)	37 (72.5%)	64 (70.3%)
Muslim	8 (20%)	4 (7.8%)	12 (13.2%)
Chatolic	2 (5%)	4 (7.8%)	6 (6.6%)
Orthodox	3 (7.5%)	6 (11.8%)	9 (9.9%)
Marital status			
Married	30 (75%)	40 (78.4%)	70 (76.9%)
Single	-	3 (5.9%)	3 (3.3%)
Divorced	5 (12.5%)	6 (11.8%)	11 (12.1%)
Widowed	5 (12.5%)	2 (3.9%)	7 (7.7%)
Ownership of transportations			
Owned	34 (85%)	23 (45.1%)	57 (62.6%)
Not owned	6 (15%)	28 (54.9%)	34 (37.4%)
Use of credit			
Yes	33	32 (62.7%)	65 (71.4%)

	(82.5%)		
No	7	19 (37.3%)	26 (28.6%)
	(17.5%)		

<i>Continuous Variables</i>					
Variables	Total sample	Member HHs (40)	Nonmember HHs (51)	Mean	Std.dev.
Age of household head	50.55	50.99	41.82	50.2	6.03
Family size (number)	4	4	3	4	1
Number of productive family	3	3	3	3	1
Education (Grade completed)	4	3	3	4	2
Farming experience (Years)	25.61	21.73	16.2	23.3	6.203
Distance to the market (Km)	5.02	3.68	4.05	4.3	0.9
Distance from coops coffee collection point (Km)	0.78	0.68	1.69	1.03	0.24
Land allotted for coffee	2.02	2.4	1.73	2.1	0.74
Amount of credit received (Birr)	2,571	3,165	2,165	2,700	2,319
Off/non-farm income (Birr)	2,210	2,418.99	330	1,375	2,583
Number of extension contact/month	97	2.2	1.76	1.98	0.6

Source;own survey result :2025

Table 4 **Sampled Households' Characteristics**

#### **4.1.2 Demographic and Socioeconomic Characteristics OF Trader**

Sex According to the survey results, the coffee trading activities in the area are mainly conducted by male traders. 87.23% of the respondents are male, while the other 12.77% are female.

**Marital Status** 89.36% of the respondents are married versus 11.64 who are single. Religion In terms of religious affiliation, the largest religion among traders is Orthodox Christianity, with 48.93% identified within the faith. Muslims 31.91% and Protestants 19.16% of respondents.

**Continuous Variables.**

Age Respondents age range from 33 to 45 years, with an mean of 40.25 years and a standard deviation of 3.726. The standard deviation is relatively low, indicating that most traders are around the same age. Famil size the respondents have an average family size of 3.9 with the least number of household members being 3 and the highest number of household members being 7. A standard deviation of 1.29 .

**Education (Years of Schooling Completed)** 6,269 traders have between 5th and 11th grade education, with an average of about (7.55) years of schooling (approximately 8th grade) and a standard deviation of 2.16.

Variables	Frequency	Percent	Min	Max	Mean	Std.dev.
Sex						
Male	21	87.23				
Female	3	12.77				
Marital status						
Married	21	89.36				
Single	3	11.64				
Religion						
Orthodox	12	48.93				
Muslim	8	31.91				
Catholic	0	0				
Protestant	5	19.16				
Socio economic (continuous variables)						

Age			33	45	40.25	3.726
Family size			3	7	3.9	1.29
Education (grade completed)			5	11	7.55	2.16

Source;own survey result :2025

**Table 5.** Demographic and Socioeconomic characteristics of Trader

#### 4.1.3. Market supply chain analysis .

Input suppliers play a crucial role by preparing and providing small-scale farmers with various agricultural inputs as needed. These inputs include, but are not limited to, seedlings, seeds, new varieties, pesticides, herbicides, fertilizers, farming equipment, cultivating machines, and harvesting machines. In Gida District, agricultural inputs, particularly those for coffee production, are predominantly supplied by government bodies. The main inputs utilized for coffee cultivation include coffee seedlings, fertilizers, herbicides, pesticides, pruning materials, and storage materials. This study identified the key input suppliers and the specific inputs each supplier offers, as summarized in Table 9. The major input suppliers for small-scale coffee producers in the area are the Gida District Office of Agriculture, the Office of Cooperative Promotion, Omo-Micro, the Farmers Training Center

Input suppliers	Input supplied
Gida District office of agriculture and rural development (GDOARD)	Fertilizers(Dap, Urea), pesticide, herbicide, equipment's (hoe, pruning scissors, cutting saw, machetes and spade, training
Gida District office of Cooperative promotion (GDOCP)	Drying materials, equipment's (hoe, pruning scissors, cutting saw, machetes and spade), storage materials like "Kesha"
Gida District Farmers Training Center Agricultural research cent	Seedlings, New coffee varieties

## **4.2. Market supply chain actor and their respective roles smallholder coffee farmers**

The specific use of this word mostly refers to a person who engages in the cultivation of field crops, the cultivation of orchard fruits, and/or the raising of livestock or poultry. In this work, we use the word “farmers” specifically to refer to those who grow and sell coffee who are producers in the coffee value chain. After input suppliers, farmers are the primary economic actors within the coffee supply chain, cultivating and maintaining coffee beans as well as selling coffee cherries at farm gate and local markets. They decide how coffee is grown, cultivated, and harvested, which has a direct effect on the quantity and quality of the resultant coffee. There are a total of 10,444 smallholder coffee producers with very small plots of land in Gida ayana District.

### **Large-Scale Private Coffee Investors**

Along with small coffee producers, gida District is also home to large private coffee investors who have enormous plots of land where they cultivate coffee. Survey data 25 also reveals 10 of such large-scale private coffee investors currently in the area. They also perform some post-harvest functions, such as coffee washing, pulping, and sorting—which is just one of the ways these investors are optimizing their involvement in the coffee value chain.

### **Coffee Collectors**

Local buyers, called “sebsabi,” purchase post-harvest coffee on behalf of suppliers. They are essential in moving coffee from faraway locales to the market, once again adding value with volume. There are seven licensed and recognized coffee collectors in the district to legally distribute coffee suppliers. They are accepted by the agricultural market development office and buy coffee from main markets for suppliers. According to the agricultural market development office, illegal coffee collectors also operate in the district. These unauthorized collectors don’t take ownership of the coffee and don’t have their own warehouses, passing coffee directly to the suppliers. Their primary role is to collect and transport coffee from producers until it achieves the minimum volume standard for supplier delivery. Usually some of these types of collectors start their operation after the legal recognition is granted as traders by the agricultural market development office.

## **Retailers**

The study identified the presence of coffee retailers in the district. These are private traders without a license specifically for coffee trading; instead, they hold licenses for trading other cereal commodities. Consequently, they are considered illegal coffee traders, through whom many local consumers access coffee. There is no structured data available on these traders, but information gathered from personal interviews and focus group discussions indicates the existence of 15 such illegal shops in the area. The primary functions of these retailers include collecting, transporting, processing (occasionally), and packing coffee, depending on their sources for the prod

## **Local Consumers.**

Local consumers are the ultimate users of coffee. In Ethiopia's coffee value chain, consumers can be broadly categorized into domestic and foreign consumers. Domestic consumers purchase coffee directly from small-scale farmers, coffee collectors, or retailers across the country. In Gida District, numerous consumers, distinct from producers and traders, buy coffee from either producers or retailers/collectors. The survey identified that the main local consumer groups in the area include civil servants and urban residents who do not have coffee plantations. Their role in the coffee value chain involves purchasing, transporting, and consuming coffee.

## **Suppliers/Wholesalers/Private Traders ("Akrabi")**

Suppliers are actors in the coffee value chain who hold licenses from the district's trade and market development office and have obtained a certificate of capability in coffee trading from the district's agriculture office. They purchase coffee from farmers in primary markets, from collectors, or through their agents. After processing, which includes cleaning and drying, they supply the coffee to the ECX warehouse for quality inspection and grading, ultimately selling it for export through their agents at the ECX. According to the Gida District Trade and Industry Office, to qualify as traders, they must have a working capital of 100,000 birr, a cemented drying field for coffee, and a storage facility. Their licenses are subject to annual renewal based on performance in the coffee market. The study revealed the existence of 30 legal coffee suppliers in the district who operate as described.

## **Coffee Cooperatives**

Coffee cooperatives are formed by farmers from various kebeles. In the district, there are 11 coffee cooperatives that perform functions such as collecting, locally processing, transporting, and selling coffee. They purchase coffee from both members and non-members, supplying it to the oromia Forest Coffee Farmers Union.

### **Local Processors**

Processing of coffee in the district is done locally with the help of large scale private investors, traders and cooperatives. These actors use both dry and wet processing methods at processing stations. Hulling, pulping, sorting, grading, packing, and weighing are the major activities in the processing of the study region.

#### **4.2.1 Analyzing challenges and opportunities of coffee production and marketing**

Value chain analysis is a broad aspect under which evaluation of limitations followed by opportunity under the domain in which the chains works, is of the basic issues and it can likewise help distinctive stake holders to recognize the current space and to reshape the way of activity in like manner. Additionally identifying challenges, and available opportunities, illustrates the problem for decision makers and is suggested as useful information for policy makers in deciding where to intervene. Using simple descriptive analysis this study obtained different challenges and opportunities of coffee value chain in the area of study, and presented it at producers and traders' level to make it simple to understand.

#### **4.2.2 Challenges/Constraints and Opportunities at Producers' Level**

##### **4.2.3 Production Challenges**

Environmental constraints pose significant barriers to coffee production. 84.5% of producers reported experiencing coffee diseases, making it the most widespread challenge. Climate change and unpredictable rainfall were also major issues, affecting 75.5% of farmers. A shortage of irrigation systems was reported by 70.7%, further worsening the impact of prolonged dry spells, making production unpredictable.

##### **Economic Challenges**

Financial limitations severely impact coffee farming. 62.9% of farmers cited high fertilizer costs, making it difficult to maintain soil fertility for healthy crops. 69.06% of respondents

reported land scarcity, limiting expansion opportunities. Furthermore, 43.09% of farmers faced a shortage of improved coffee varieties, while 41.43% reported insufficient coffee drying facilities, affecting processing and quality. The most critical economic challenge was the shortage of proper storage facilities, impacting 86.18% of producers, leading to high post-harvest losses.

### Technical Challenges

Limited technical support and weak research-extension linkages hinder productivity. 70.0% of respondents identified a weak connection between research institutions, extension services, and producers, slowing the adoption of modern farming techniques. Additionally, 78.57% of farmers faced limited communication, infrastructure, and logistics, restricting access to technical support and improved farming methods. 70.0% of producers noted poor adoption of new agricultural technologies, while 75.0% reported poor harvest and post-harvest practices, further reducing coffee quality.

### Production Opportunities

Despite these challenges, coffee farming presents notable opportunities. 80.11% of farmers identified the region’s soil type and topography as highly suitable for coffee cultivation. Additionally, 69.06% of respondents acknowledged the availability of local seedlings, which helps smallholder farmers reduce costs and improve production.

Category	Percentage	Frequency
<b>Production Challenges</b>		
Coffee disease	84.5%	77
Climate change & unpredictable rains	75.5%	69
Shortage of suitable irrigation	70.7%	64
<b>Economic Challenges</b>		
High cost of fertilizer	62.9%	57
Limitation of land	69.06%	63
Shortage of improved variety	43.09%	39

Shortage of coffee drying facility	41.43%	38
Shortage of proper storage with adequate facilities	86.18%	78
<b>Technical Challenges</b>		
Weak linkage between research, extension, producers	70.0%	64
Limited communication, infrastructure, logistics	78.57%	71
Poor initiative for new agricultural technologies	70.0%	64
Poor harvest/post-harvest practices	75.0%	68
<b>Production Opportunities</b>		
Suitable soil type and topography	80.11%	73
Availability of local seedlings	69.06%	63

Table 6. Challenges/Constraints and Opportunities at Producers' Level

#### 4.2.4 Marketing Challenges and Opportunities

<i>Category</i>	<i>Frq</i>	<i>%</i>
<b>Challenges'</b>	76	83.97
Price fluctuation		
Limited access to market information	63	69.06
Inadequate transportation access	61	66.85
Delay in payment for dividend (for cooperatives)	34	84.81
<b>Opportunities</b>	88	96.68
Expansion of private coffee traders		
Availability of alternative market route	69	75.69

Source:own survey result 2025

#### Table 7 Marketing Challenge And Opportunities At Producers Level

##### Challenges

Several market-related challenges impact coffee producers. Price fluctuation is a major concern, affecting 83.97% of producers, making income unpredictable and limiting financial

stability. Limited access to market information was reported by 69.06%, preventing farmers from making informed decisions regarding pricing and sales. Additionally, 66.85% of respondents faced inadequate transportation access, restricting their ability to reach markets efficiently. Among cooperative members, 84.81% experienced delays in dividend payments, affecting their cash flow and ability to reinvest in production.

#### Opportunities

Despite these challenges, there are significant opportunities in the coffee market. The expansion of private coffee traders was recognized by 96.68% of respondents, indicating a growing network for selling coffee beyond traditional cooperatives. Additionally, 75.69% of producers acknowledged the availability of alternative market routes, providing more options to reach buyers and potentially improving profit margins

#### 4.2.5 Challenge and opportunity traders level

<i>Category</i>	<i>Frq (f)</i>	<i>%</i>
Challenges	4	94
Shortage of coffee processing machine		
Dynamic nature of coffee supply	4	90.6
Administrative problems	4	94
Shortage of working capital	2	56
Over taxation	3	78
Price volatility	3	
	4	100
<b>Opportunities</b>		
Availability of market center at each corner of the District		
Regular professionals support	4	94
Increase in international coffee demand	3	78

Source:own survey result 2025

**Table 8** Challenge And Opportunity Traders Level

Key challenges and opportunities in the coffee sector, highlighting factors affecting its growth and sustainability. Among the major challenges, the shortage of coffee processing machines is a significant issue, with 94% of respondents acknowledging its impact. The dynamic nature of coffee supply is another crucial challenge, as 90.6% of respondents identified fluctuations in production and availability as a major concern. Additionally, administrative problems, such as bureaucratic inefficiencies or regulatory hurdles, were reported by 94% of respondents, showing a widespread issue in governance. Financial constraints also pose a challenge, with a shortage of working capital affecting 56% of respondents, limiting investment in coffee production and processing. Over-taxation was another concern, with 78% of respondents indicating that high taxes create financial burdens for stakeholders in the sector. Moreover, price volatility was mentioned as a challenge, though its percentage is not provided, suggesting that fluctuations in coffee prices impact profitability and financial stability.

Despite these challenges, several opportunities exist that support the growth of the coffee industry. One of the most significant advantages is the availability of market centers at each corner of the district, which received a full 100% recognition, indicating strong local trade networks. Another vital opportunity is the proximity to the Ethiopian Commodity Exchange (ECX), with 87.5% of respondents acknowledging the benefits of easy access to a regulated marketplace that ensures fair trade and price transparency. Furthermore, regular professional support, such as training and technical assistance, was highlighted by 94% of respondents as an essential factor in improving coffee production and quality. Lastly, the increase in international coffee demand was recognized by 78% of respondents, reflecting the potential for export growth and higher revenues due to the expanding global market.

Overall, while the coffee sector faces significant hurdles related to infrastructure, administration, and financial stability, it also benefits from strategic advantages like strong market access, institutional support, and growing international demand. Addressing these challenges while capitalizing on opportunities can enhance the sector's resilience and long-term success.

## **4.3 Result of Econometric Analysis**

### **4.3.1 Analysis of Coffee Market Supply Determinants: Methodological Framework**

Given coffee's status as a perennial cash crop, farmers prioritize its cultivation for commercial sales while reserving a portion for household consumption. This study confirms that all sampled households participate in coffee market supply. To identify factors influencing market supply, multiple linear regression models were employed. Ensuring the efficiency, unbiasedness, and consistency of parameter estimates required adherence to Classical Linear Regression (CLR) assumptions. Consequently, diagnostic tests for multicollinearity, endogeneity, and heteroscedasticity were conducted using appropriate statistical methods.

The multiple linear regression model was used to analyze factors affecting the quantity of coffee supplied to the market. The overall model was found to be statistically significant at a 1% significance level ( $\text{Prob} > F = 0.0000$ ), indicating that the independent variables jointly explain a significant portion of the variation in coffee supply. The R-squared value of 0.827 suggests that 82.7% of the variation in coffee supply is explained by the model, confirming a strong fit

#### **Multicollinearity Assessment**

Prior to model specification, multicollinearity among independent variables was evaluated, as excessive intercorrelation can distort parameter estimates. Following Gujarati (2003), Variance Inflation Factor (VIF) thresholds were applied, with values exceeding 10 indicating severe collinearity. As shown in Appendix Table, all VIF values remained below this threshold, confirming no significant multicollinearity issues.

#### **Heteroscedasticity Testing**

The Breusch-Pagan test in STATA revealed heteroscedasticity a violation of the CLR assumption of constant error variance. To address this, Robust Ordinary Least Squares (OLS) estimation with heteroscedasticity-consistent standard errors was implemented, ensuring Best Linear Unbiased Estimator (BLUE) properties.

### **4.3.2 Determinants of quantity of coffee supplied to market**

<i>qsup</i>	<i>Coef.</i>	<i>Std. Err.</i>	<i>t</i>	<i>P&gt;t</i>	<i>[95% Conf. Interval]</i>
transportat~d	.2396308	.4126313	0.58	0.563	-.582023 1.061285
non_farm_in~e	-.0001492	.0001431	-1.04	0.300	-.0004341 .0001358
cooperative~p	.323439	.59609	6.91	0.004	.2200453 .357653
distance_ma~t	-.0992194	.0419243	-2.37	0.020	-.1827014 -.0157374
coffee_prod~d	.4453368	.0582689	7.64	0.000	.3293087 .561365
credit_rece~d	.0002855	.0001161	2.46	0.016	.0000543 .0005168
farming_exp~e	.2369163	.0296458	7.99	0.000	.1778839 .2959487
family_size	.1253616	.1163489	1.08	0.285	-.1063187 .3570418
size_land	.163738	.4298214	0.38	0.704	-.6921458 1.019622
frequency_e~t	-.0720767	.119475	-0.60	0.548	-.3099818 .1658284
education	.1885767	.0524014	3.60	0.001	.0842323 .2929211
age	.0143714	.0179657	0.80	0.426	-.0214028 .0501456
sex	.0440254	.5399954	0.08	0.935	-1.031243 1.119294
_cons	1.11437	2.028869	0.55	0.584	-2.925625 5.154365

Source :stata result 2025

**Table 9 Determinants of Farm-Level Volume Sales of Coffee (Multiple Linear Regression Estimates).**

**Quantity of Coffee Produced** as hypothesized, quantity of coffee produced is positively and significantly related to market supply of coffee at a 1% significance level. The coefficient for coffee production (0.445) indicates that an increase in coffee production by one quintal (qt) leads to an increase in market supply by 0.445 qt, keeping all other factors constant. This finding aligns with Bosena (2008) and Bosena & Addisu (2016), who found that increased productivity of cotton and potatoes significantly enhanced their market supply.

**Education Level of Household Head;** Education was found to have a positive and significant effect on the volume of coffee supplied at a 1% significance level. The model results indicate that each additional year of education leads to an increase in coffee supply by 0.188 qt, holding all other variables constant. This suggests that better-educated farmers are

more likely to make informed decisions, access market information, and implement improved farming techniques. Similar results were reported by Zekarias et al. (2012), who found that education enhances farmers' participation in market chains.

**Cooperative Membership;**The study reveals a statistically significant positive relationship between cooperative membership and coffee supply, with members supplying 0.323 quintals more than non-members. This suggests that cooperatives enhance farmers' productivity by offering access to resources, better farming practices, and market opportunities. These findings highlight the value of cooperative membership in boosting agricultural output and ensuring sustainable income for farmers.

This aligns with Bizualem et al. (2015), who noted that cooperative membership positively influences marketing behavior by fostering long-term benefits and collective success. Overall, the results underscore the important role of cooperatives in empowering farmers and improving agricultural outcomes.

**Distance to the Nearest Market;**As expected, distance to the market negatively affects coffee supply and is significant at a 5% level. The coefficient (-0.099) suggests that for every additional kilometer from the market, coffee supply decreases by 0.099 qt, keeping all other factors constant. This finding is consistent with Wendimagegn (2014), who reported that increased market distance raises transportation costs, reducing market participation and supply volume.

**Credit Access ;**Access to credit was found to have a positive and significant impact on coffee supply at a 5% level. The coefficient (0.0002855) suggests that higher credit availability increases market supply, though the effect size is small. This result supports previous studies indicating that credit access improves farmers' ability to invest in productivity-enhancing inputs (Agete, 2014).

**Farming Experience** Experience in coffee farming was positively associated with market supply at a 1% significance level. The coefficient (0.236) indicates that an additional year of farming experience increases coffee supply by 0.236 qt, holding other factors constant. This confirms that experienced farmers are more efficient in managing production and marketing strategies, consistent with prior research (Wendimagegn, 2014).

**Other Factors** Variables such as sex of household head, family size, ownership of transportation, and non-farm income were found to be statistically insignificant in explaining the volume of coffee supplied in the study area. This suggests that these factors do not significantly influence farmers' decision-making regarding market supply.

## **5. CONCLUSION AND RECOMMENDATIONS**

### **5.1 Conclusion**

This study analyzed the coffee market supply chain of smallholder farmers in Gida Ayana District, East Wollega Zone, Oromia Region, Ethiopia. The research aimed to identify key actors involved in the coffee market supply chain, assess the factors affecting coffee market supply, and evaluate the challenges and opportunities within the sector.

Ethiopia, as the birthplace of Arabica coffee, plays a crucial role in the global coffee market, with Oromia being the leading coffee-producing region. However, despite its potential, the country faces several challenges that limit the productivity and efficiency of the coffee supply chain.

The study identified various key actors within the coffee market supply chain, including smallholder farmers, large-scale investors, coffee cooperatives, suppliers, traders, processors, and exporters. Each actor plays a critical role in ensuring the production, processing, and marketing of coffee. However, inefficiencies in the value chain, such as weak linkages between producers and markets, inadequate access to credit, and poor infrastructure, hinder the overall performance of the sector.

Several factors were found to significantly impact the market supply of coffee. The quantity of coffee produced was a major determinant of market supply, with increased production leading to higher market participation. Additionally, education level, cooperative membership, and access to credit positively influenced the market supply. On the other hand, distance to market negatively affected the volume of coffee supplied, indicating that transportation and logistics remain critical challenges for smallholder farmers.

Challenges identified at the production level include coffee diseases, climate change, limited access to improved coffee varieties, and poor post-harvest handling practices. Marketing challenges such as price fluctuations, limited access to market information, and inadequate transportation infrastructure further constrained the sector. Additionally, regulatory and administrative issues, including over-taxation and delays in cooperative dividend payments, were found to negatively impact market efficiency.

Despite these challenges, the study highlighted several opportunities that could enhance the coffee market supply chain. The expansion of private coffee traders, availability of alternative market routes, and the non-perishable nature of coffee offer potential for improved market access. Additionally, proximity to research institutions and government support for model coffee producers create opportunities for capacity-building and technology adoption.

To enhance the coffee market supply chain in Gida Ayana District, policy recommendations include improving access to financial services, strengthening cooperative institutions, investing in transportation and logistics, and promoting sustainable coffee production practices. Additionally, fostering linkages between research institutions and farmers could support the adoption of improved coffee varieties and agronomic practices.

In conclusion, while the Ethiopian coffee sector faces numerous challenges, targeted interventions and strategic investments can unlock its full potential. Strengthening the coffee value chain through policy reforms, infrastructure development, and enhanced market linkages will not only improve the livelihoods of smallholder farmers but also contribute to the national economy and global coffee trade.

## 5.2 Recommendations

- **Improve Access to Financial Services:** Government and financial institutions should provide smallholder farmers with affordable credit options to facilitate investments in improved coffee production and processing technologies.
- **Strengthen Cooperative Institutions:** Encouraging cooperative membership and improving governance within coffee cooperatives can enhance farmers' bargaining power and ensure fair market prices.
- **prioritize education in agricultural programs.** This includes targeted training on modern farming, market access, and financial literacy. Invest in rural education and scale effective extension services, tracking their impact.
- **Enhance Infrastructure Development:** Investment in rural roads, storage facilities, and processing centers will help reduce post-harvest losses and improve market access for coffee producers.

- **Enhancing farmers' expertise** through training, knowledge sharing, and incentives can significantly boost coffee supply, leveraging the strong correlation between farming experience and market efficiency.
- **Promote Sustainable Coffee Production Practices:** Training programs on climate-resilient farming techniques and integrated pest management should be provided to mitigate the adverse effects of climate change and pests on coffee production.
- **Improve Market Information Systems:** Establishing efficient and transparent market information systems will enable farmers to make informed decisions regarding coffee sales and pricing.
- **Develop Alternative Market Routes:** Expanding local and international market linkages, including direct trade partnerships, can help farmers secure better prices and reduce dependency on middlemen.
- **Support Research and Development:** Collaboration between research institutions and farmers should be strengthened to facilitate the adoption of improved coffee varieties and agronomic practices.
- **Enhance Government Policy and Regulation:** The government should streamline coffee export policies, reduce bureaucratic inefficiencies, and implement fair taxation systems to promote competitiveness in the global market.
- **Encourage Private Sector Participation:** Increased involvement of private investors in coffee processing and export can contribute to the overall growth and sustainability of the sector.
- **Enhancing coffee productivity** through advanced farming techniques, financial support, infrastructure development, and market expansion can significantly boost market supply and economic growth.

## 6.REFERENCE

- Agete, B. (2014). The role of credit access in enhancing smallholder farmers' market supply.
- Aklilu A, Ludi E (2010). The Effect of Global Coffee Price Changes on Rural Livelihoods and Natural Resource Management in Ethiopia. A Case study from Jimma area. NCCR North-South Dialogue 26. Bern, Switzerland
- Alemayehu Asfaw. 2014. Coffee production and marketing in Ethiopia. *European Journal of Business and Management*, 6(37)
- Alemu, D., Meijerink, G., 2010. The Ethiopian Commodity Exchange: An overview.
- Arslan, A., & Reicher, C. P. (2011). The effect of the coffee trade on rural livelihoods: a case study in Ethiopia. *Agricultural Economics*, 42(4), 533-546.
- Bastin, A. and Matteucci, N. 2007. Financing coffee farmers in Ethiopia: Challenges and Opportunities, 31(3): 251-282.
- Bastin, A. and Matteucci, N. 2007. Financing coffee farmers in Ethiopia:
- Berhanu Tsegaye. 2017. Ethiopian Coffee Sector Strategy and Future Prospects. Coffee crops (private peasant holding, meher season), *Stat. Bull.* 587 (2020). Addis Ababa,
- Birhe, A. (2010). Analysis of intra-annual coffee price behavior in Ethiopia: the case of Sidama coffee. MSc Thesis, Haramaya University.
- Bosena, D. (2008). Market chain analysis of coffee in Ethiopia: The case of Sidama coffee.
- Bosena, D., & Addisu, A. (2016). Market supply determinants of coffee in Ethiopia.
- CSA (Central Statistical Agency) (2019). Agricultural sample survey: report on area and production of major crops of private peasant holdings for meher season of 2018/19.
- CSA (Central Statistical Agency). 2012/13. Reports on area and production of crops (Private Peasant Holdings, Meher Season). Addis Ababa, Ethiopia. CSA (Central Statistical Agency). 2013/14.
- Daba Eta Etana, Dawit Merga. The Current Climate Change Impacts in Arabica Ethiopia. *Journal of Food Composition and Analysis*, FAO (2019) reports that Ethiopia achieved , Worku (2019), Crawford (1997), Olukosi (2017), Determinants of Coffee Market Outlet Choices
- Damte, T. B., & Negash, F. (2014). Value chain analysis of coffee in Goma Woreda, Jimma Zone of Oromia National Regional State of Ethiopia. *International Journal of African and Asian Studies*, 3, 49-60.

- Dorward, P., Shepherd, D. and Galpin, M. (2010), Participatory Farm Management: Methods for Analysis, Decision Making and Communication, Food and Agriculture Organisation of the United Nations (FAO), Rome. [Google Scholar]
- Elias Abebe, 2005. Economics of coffee marketing: A Case Study of Goma District in Jimma Zone of Ethiopia,
- Engida Gebre, 2017. Market chain analysis of coffee A Case Study Gawata woreda, Kaffa Zone of SNNPRS,EP (European Parliament) resolution of 19 January 20(RSP 2011.
- Evans, R., 2004. Marketing in the 21st century-8th Edition, Atomic Dog Publishing. Pp. 35
- FAO, 2005. Global Information and Early Warning System on Food and Agriculture World Food Program: Special Report FAO: Crop and Food Supply Assessment Mission to EthiopiaA
- FAO. (2019). Improving coffee value chain in Ethiopia. Food and Agriculture Organization of the United Nations.
- Gebreselassie, S., & Bekele, A. H. (2018). The coffee value chain and the livelihood of smallholder coffee producers in Ethiopia. *Journal of Development and Agricultural Economics*, 10(6), 180-190.
- Getachew Nigussie, 2009. Honey market chain analysis: The case of Burie Woreda, WestGojjam Zone, Amhara National Regional State
- International Coffee Organization. (2022). Total production of exporting countries. Retrieved from <https://www.ico.org/prices/po-production.pdf>
- Jezeer, R.E., Verweij, P.A., Santos, M.J. and Pacheco, P. (2018). Shaded coffee and cocoa—double dividend for biodiversity and small-scale farmers. *Ecological Economics*, 144, pp.139-152.
- Jima, T.T., Wolde, Z.W. and Negash, D.A. (2017). Determinants of smallholder coffee farmers' market outlet choice: The case of Jimma zone, Southwest Ethiopia. *Agricultural and Food Economics*, 5(1), pp.1-15.
- Kaplinsky, R., and M. Morris, 2001. A handbook for value chain research. Ottawa, Canada, International Development Research Center
- KIT, Faida and IIRR.2006.chain empowerment. Supporting African producers to develop market. Royal tropical institute, Fida Market Link and International Institute of Rural Reconstruction.
- Koenders on coffee - given at the Peace Palace in The Hague, 25 January 2010.lowland and midland coffee-growing areas southwestern
- Kuma, B., Getnet, K., Legesse, B., Haji, J., & Desale, K. (2019). Determinants of smallholder farmers' participation in coffee value chain in Southwest Ethiopia. *Agricultural and Food Economics*, 7(1), 1-18.
- Minten, B., Dereje, M., Engida, E., & Kuma, T. (2021). Coffee value chains on the move: Evidence in Ethiopia. *Food Policy*, 100, 102023.

- MUDC, (2013). Survey conducted (MSEs) in Selected in 28 major urban Cities of Ethiopia  
Radio Netherlands, Speech by Minister for Development Cooperation Bert
- Petit, N. (2007). Ethiopia's coffee sector: a bitter or better future?. *Journal of Agrarian Change*, 7(2), 225-263.
- Petit, N. (2007). Ethiopia's coffee sector: A bitter or better future?. *Journal of Agrarian Change*, 7(2), 225-263.
- Tadesse, A.L., Beza, E.A., Coulibaly, J.Y. and Mutenje, M. (2020). Sustainable coffee production in Ethiopia: understanding the role of multi-dimensional technologies. *Land Use Policy*, 92, p.104461.
- Tadesse, M. A., Birner, R., & Gulti, D. (2017). Drivers of barley yield gaps in Ethiopia: A spatial sample survey regression approach. *International Food and Agribusiness Management Review*, 20(3), 407-430.
- Tafesse, A. S. (2020). The political economy of the Ethiopian Commodity Exchange. *Review of African Political Economy*, 47(163), 86-100.
- Teshome, A., Helmsing, A. H. J., & Ruben, R. (2015). Expanding the niche? Supermarket engagement with small-scale producers in Ethiopia. *The Journal of Development Studies*, 51(11), 1465-1482.
- UNECA, 2009. Sustainable Development Report, UNECA. Addis Ababa, Ethiopia
- UNIDO (United Nations Industrial Development Organization), 2012. Agro-value chain analysis and development
- USAID 2010. Ethiopian Coffee Industry Value Chain Analysis Profiling the Actors, Their Interactions Costs Constraints and Opportunities Chemonics International  
Wageningen University, The Netherlands
- Wendimagegn, A. (2014). Factors affecting market participation of smallholder coffee farmers in Ethiopia.
- Worku, I. (2019). Coffee value chain and determinants of market outlet choices in southwestern Ethiopia. *Cogent Food & Agriculture*, 5(1), p.1700723.
- Worrkuu, M., Astatkie, T., & Becky, P. (2023b). Shade and post harvest processing effects on arabica coffee quality and biochemical composition in lowland and midland coffee-growing areas southwestern try
- Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper and Row.
- Zekarias, S., et al. (2012). The impact of education on farmers' market participation in Ethiopia.

## **7. Appendix**

Respondant Questionnaire

**Wolkite University, College Of Agriculture And Natural Resource**

**Department Of Agricultural Economics**

**Coffe Market Supply Chain Analysis Of Smallholder Farmers In Case Of Gida  
Ayana District East Wollega Zone, Oromia Region, Ethiopia**

**Prepared By: Kenenisa Wayessa**

**Wolkite University**

**Survey Questionnaires**

### **Section 1: Demographic And Socioeconomic Information**

#### **1. Sex Of The Household Head**

- Male
- Female

#### **2. Age Of The Household Head**

- Please Specify: \_\_\_\_\_ Years

#### **3. Marital Status**

- Married
- Single
- Divorced
- Widowed

#### **4. Religion**

- Protestant
- Muslim
- Catholic
- Orthodox
- Other (Please Specify): \_\_\_\_\_

#### **5. Education Level Of The Household Head**

- No Formal Education
- Primary Education (1-8 Years)

- Secondary Education (9-12 Years)
  - Higher Education (Above 12 Years)
- 6. Family Size**
- Please Specify: \_\_\_\_\_ Members
- 7. Ownership Of Transportation Facility**
- Yes
  - No
- 8. Use Of Credit Services**
- Yes
  - No
- 9. Amount Of Credit Received (If Applicable)**
- Please Specify: \_\_\_\_\_ Birr
- 10. Farming Experience**
- Please Specify: \_\_\_\_\_ Years
- 11. Distance To The Nearest Market**
- Please Specify: \_\_\_\_\_ Km
- 12. Distance From Coffee Cooperative Collection Point**
- Please Specify: \_\_\_\_\_ Km
- 13. Land Allotted For Coffee Production**
- Please Specify: \_\_\_\_\_ Hectares
- 14. Off/Non-Farm Income**
- Please Specify: \_\_\_\_\_ Birr
- 15. Number Of Extension Contacts Per Month**
- Please Specify: \_\_\_\_\_ Visits

**Section 2: Coffee Production And Marketing**

- 16. Quantity Of Coffee Produced In The Last Season**
- Please Specify: \_\_\_\_\_ Quintals
- 17. Quantity Of Coffee Supplied To The Market**
- Please Specify: \_\_\_\_\_ Quintals
- 18. Membership In Coffee Cooperative**
- Yes
  - No
- 19. Access To Market Information**
- Yes
  - No
- 20. Price Of Coffee In The Last Season**
- Please Specify: \_\_\_\_\_ Birr Per Quintal
- 21. Challenges Faced In Coffee Production (Check All That Apply)**
- Coffee Diseases
  - Climate Change & Unpredictable Rains

- Shortage Of Suitable Irrigation
- High Cost Of Fertilizer
- Limitation Of Land
- Shortage Of Improved Variety
- Shortage Of Coffee Drying Facility
- Shortage Of Proper Storage With Adequate Facilities
- Weak Linkage Between Research, Extension Services, And Producers
- Limited Communication, Infrastructure, And Logistics
- Utilization Of Old Coffee Tree Over Time/Weak Management
- Poor Initiative For Utilization Of New Agricultural Technologies
- Poor Harvest And Post-Harvest Practices
- Weak Experience On Exploitation Of Locally Available Production Inputs

**22. Opportunities In Coffee Production (Check All That Apply)**

- Existence Of Suitable Soil Type And Topography
- Availability Of Local Seedlings
- Regular Professionals Follow Up
- Proximity To Agricultural Research Institute (Bonga Center)
- Government Encouragement Of Model Coffee Producers

**23. Marketing Challenges (Check All That Apply)**

- Price Fluctuation
- Limited Access To Market Information
- Inadequate Transportation Access
- Delay In Payment For Dividend (For Cooperatives)
- Delay In Opening Of Marketing (For Cooperatives)

**24. Marketing Opportunities (Check All That Apply)**

- Expansion Of Private Coffee Traders
- Availability Of Alternative Market Route
- Nonperishable Nature Of The Produce

**Section 3: Trader-Specific Questions (For Traders Only)**

**25. Sex**

- Male
- Female

**26. Age**

- Please Specify: \_\_\_\_\_ Years

**27. Marital Status**

- Married
- Single

**28. Religion**

- Orthodox
- Muslim
- Catholic

- Protestant

**29. Family Size**

- Please Specify: \_\_\_\_\_ Members

**30. Education (Years Of Schooling Completed)**

- Please Specify: \_\_\_\_\_ Years

**31. Challenges Faced In Coffee Trading (Check All That Apply)**

- Shortage Of Coffee Processing Machine
- Dynamic Nature Of Coffee Supply
- Administrative Problems
- Shortage Of Working Capital
- Over Taxation
- Price Volatility

**32. Opportunities In Coffee Trading (Check All That Apply)**

- Availability Of Market Center At Each Corner Of The District
- Proximity To ECX
- Regular Professionals Support
- Increase In International Coffee Demand

**Section 4: General Feedback**

**33. Any Additional Comments Or Suggestions For Improving The Coffee Market Supply Chain?**

- Please \_\_\_\_\_ Specify:

\_\_\_\_\_

---

**Thank You For Your Participation!**

---

This Questionnaire Is Designed To Gather Comprehensive Data On The Coffee Market Supply Chain In Gida Ayana District, Focusing On The Challenges, Opportunities, And Factors Affecting Coffee Production And Marketing. The Responses Will Be Used To Inform Policy Recommendations And Interventions Aimed At Improving The Livelihoods Of Smallholder Farmers

Sample distribution of producers across kebele and Samaple distribution of trades

kebele	popul .	sampled	Traders	Sampled	
Lalistu:	231	26			
Meti	204	23	Collectors (Sebsabi)		3
Gaferso	186	21	Suppliers (Akrabi)		10
Andode:	186	21	Retailers		7
			C.Coop		2
			LSPIs		2

Categorical Variables:

<i>Variables Category</i>	<i>Members (40)</i>	<i>Nonmembers (51)</i>	<i>Total sample (91)</i>
<b>Sex</b>			
Male	33 (82.5%)	42 (82.4%)	75 (82.4%)
Female	7 (17.5%)	9 (17.6%)	16 (17.6%)
<b>Religion</b>			
Protestant	27 (67.5%)	37 (72.5%)	64 (70.3%)
Muslim	8 (20%)	4 (7.8%)	12 (13.2%)
Chatolic	2 (5%)	4 (7.8%)	6 (6.6%)
Orthodox	3 (7.5%)	6 (11.8%)	9 (9.9%)
<b>Marital status</b>			
Married	30 (75%)	40 (78.4%)	70 (76.9%)
Single	-	3 (5.9%)	3 (3.3%)
Divorced	5 (12.5%)	6 (11.8%)	11 (12.1%)
Widowed	5 (12.5%)	2 (3.9%)	7 (7.7%)
<b>Ownership of transportations</b>			

Owned	34 (85%)	23 (45.1%)	57 (62.6%)
Not owned	6 (15%)	28 (54.9%)	34 (37.4%)
Use of credit			
Yes	33 (82.5%)	32 (62.7%)	65 (71.4%)
No	7 (17.5%)	19 (37.3%)	26 (28.6%)

<i>Continuous Variables</i>						
Variables	Total sample	Member HHs (40)	Nonmember HHs (51)	Mean	Std.dev.	t-value
Age of household head	50.55	50.99	41.82	50.2	6.03	(3.13)***
Family size (number)	4	4	3	4	1	-0.77
Number of productive family	3	3	3	3	1	
Education (Grade completed)	4	3	3	4	2	5.62***
Farming experience (Years)	25.61	21.73	16.2	23.3	6.203	-6.8
Distance to the market (Km)	5.02	3.68	4.05	4.3	0.9	
Distance from coops coffee collection point (Km)	0.78	0.68	1.69	1.03	0.24	(-10.02)
Land allotted for coffee	2.02	2.4	1.73	2.1	0.74	
Amount of credit received (Birr)	2,571	3,165	2,165	2,700	2,319	
Off/non-farm income (Birr)	2,210	2,418.99	330	1,375	2,583	
Number of extension contact/month	97	2.2	1.76	1.98	0.6	1.149

and \* significant at 1%, 5% and 10% probability level respectively.

<i>Variables</i>	<i>Frequency</i>	<i>Percent</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>Std.dev.</i>
------------------	------------------	----------------	------------	------------	-------------	-----------------

Sex					
Male	21	87.23			
Female	3	12.77			
Marital status					
Married	21	89.36			
Single	3	11.64			
Religion					
Orthodox	12	48.93			
Muslim	8	31.91			
Catholic	0	0			
Protestant	5	19.16			
Socio economic (continuous variables)					
Age			33	45	40.25 3.726
Family size			3	7	3.9 1.29
Education (grade completed)			5	11	7.55 2.16

**Table 10.** Demographic And Socioeconomic Characteristics Of Trader

Challenges/Constraints and Opportunities at Producers' Level

<i>Category</i>	<i>Percentage</i>	<i>Frequency_91</i>
Coffee disease	84.5	77
Climate change & unpredictable rains	75.5	69
Shortage of suitable irrigation	70.7	64
<b>Economic</b>	62.9	57
High cost of fertilizer		
Limitation of land	69.06	63
Shortage of improved variety	43.09	39
Shortage of coffee drying facility	41.43	38

Shortage of proper storage with adequate facilities	86.18	78
Technical (Result of FGD)	100	7
Weak linkage between research, extension services and producers		
Limited communication, infrastructure and logistics	78.57	7
Social/cultural related (Result of FGD)	100	7
Utilization of old coffee tree over time/weak management		
Poor initiative for utilization of new agricultural technologies	100	7
Poor harvest and post-harvest practices	100	7
Weak experience on exploitation of locally available production inputs	85.71	6
<b>PRODUCTION OPPORTUNITIES (Result of both survey and FGD)</b>	<b>80.11</b>	<b>73</b>
Existence of suitable soil type and topography		
Availability of local seedlings	69.06	63
Regular professionals follow up	86.18	79
Proximity to Agricultural Research Institute (Bonga center)	100	91
Government encouragement of model coffee producers	100	91

### Marketing Challenges and Opportunities

<i>Category</i>	<i>Frq</i>	<i>%</i>
<b>Challenges'</b>	76	83.97
Price fluctuation		
Limited access to market information	63	69.06
Inadequate transportation access	61	66.85
Delay in payment for dividend (for cooperatives)	34	84.81
Delay in opening of marketing (for	30	74.68

cooperatives)		
<b>Opportunities</b>	88	96.68
Expansion of private coffee traders		
Availability of alternative market route	69	75.69
Nonperishable nature of the produce	89	98.34

---

<b>Marketing Challenges and Opportunities Marketing Challenges and Opportunities</b>
--

<i>Category</i>	<i>Frq</i>	<i>%</i>
<b>Challenges'</b>	76	83.97
Price fluctuation		
Limited access to market information	63	69.06
Inadequate transportation access	61	66.85
Delay in payment for dividend (for cooperatives)	34	84.81
Delay in opening of marketing (for cooperatives)	30	74.68
<b>Opportunities</b>	88	96.68
Expansion of private coffee traders		
Availability of alternative market route	69	75.69
Nonperishable nature of the produce	89	98.34

---

## Challenge and opportunity traders level

Category	Frq (f)	%
<b>Challenges</b>		
Shortage of coffee processing machine	4	94
Dynamic nature of coffee supply	4	90.6
Administrative problems	4	94
Shortage of working capital	2	56
Over taxation	3	78
Price volatility	3	

### Opportunities

Availability of market center at each corner of the		
District	4	100
Proximity to ECX	4	87.5
Regular professionals support	4	94
Increase in international coffee demand	3	78

<i>Category</i>	<i>Frq</i>	<i>%</i>
<b>Challenges'</b>	76	83.97
Price fluctuation		
Limited access to market information	63	69.06
Inadequate transportation access	61	66.85
Delay in payment for dividend (for cooperatives)	34	84.81
Delay in opening of marketing (for cooperatives)	30	74.68
<b>Opportunities</b>	88	96.68
Expansion of private coffee traders		
Availability of alternative market route	69	75.69
Nonperishable nature of the produce	89	98.34

Vif of the variables

Variable	VIF	1/VIF
age	1.22	0.821725
frequency_~t	1.18	0.846168
family_size	1.18	0.846366
farming_ex~e	1.17	0.856452
coffee_pro~d	1.16	0.859125
credit_rec~d	1.15	0.867128
non_farm_i~e	1.14	0.874023
cooperativ~p	1.14	0.875258
distance_m~t	1.11	0.901796
size_land_~e	1.11	0.904049
transporta~d	1.08	0.926003
sex	1.07	0.931807
education	1.05	0.948778
Mean VIF	1.14	

**Result of multiple liner regression of quantity of coffe supplied to market**

<i>qsup</i>	<i>Coef.</i>	<i>Std. Err.</i>	<i>t</i>	<i>P&gt;t</i>	<i>[95% Conf. Interval]</i>
transportat~d	.2396308	.4126313	0.58	0.563	-.582023 1.061285
non_farm_in~e	-.0001492	.0001431	-1.04	0.300	-.0004341 .0001358
cooperative~p	.323439	.59609	6.91	0.004	.2200453 .357653
distance_ma~t	-.0992194	.0419243	-2.37	0.020	-.1827014 -.0157374
coffee_pro~d	.4453368	.0582689	7.64	0.000	.3293087 .561365
credit_rece~d	.0002855	.0001161	2.46	0.016	.0000543 .0005168

farming_exp~e	.2369163	.0296458	7.99	0.000	.1778839	.2959487
family_size	.1253616	.1163489	1.08	0.285	-.1063187	.3570418
size_land	.163738	.4298214	0.38	0.704	-.6921458	1.019622
frequency_e~t	-.0720767	.119475	-0.60	0.548	-.3099818	.1658284
education	.1885767	.0524014	3.60	0.001	.0842323	.2929211
age	.0143714	.0179657	0.80	0.426	-.0214028	.0501456
sex	.0440254	.5399954	0.08	0.935	-1.031243	1.119294
_cons	1.11437	2.028869	0.55	0.584	-2.925625	5.154365