# ANALYSIS OF DETERMINANTS OF COFFEE VALUE CHAIN PERFORMANCE IN ETHIOPIA

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## Analysis of Determinants of Coffee Value Chain Performance in Ethiopia

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# LETTER OF CERTIFICATION

This is to certify that Girma Bayu has carried out his Thesis on the topic of "Analysis of Determinants of Coffee Value Chain Performance in Ethiopia" under my Supervision. This work is original in its nature and it is suitable for submission in partial fulfillment of the requirement for the award of Masters of Arts Degree in Logistics and Supply Chain Management.

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Date

# DECLARATIONS

I, Girma Bayu, declare that this Thesis entitled "Analysis of Determinants of Coffee Value Chain Performance in Ethiopia" is my own original work. I have carried out it independently with the guidance and suggestions of the research advisor. And it has not been presented in Addis Ababa University or any other University.

Girma Bayu _____

(The Researcher) Signature

_____

Date

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## LIST OF ACRONYMS/ABBREVIATIONS

| | |
|---|---|
| CSA | Central Statistics Agency |
| ECX | Ethiopian Commodity Exchange |
| ERCA | Ethiopian Revenue and Custom Authority |
| GDP | Gross Domestic Product |
| LDC | Least Developed Countries |
| MoT | Ministry of Trade |
| NBE | National Bank of Ethiopia |
| NGO | Non-governmental Organizations |
| PLCTC | Primary level coffee transaction centers |
| SNNP | Southern Nations and Nationality of People |
| UNIDO | United Nations Industrial Development Organization |

# ABSTRACT

*Coffee is one of the most popular crop worldwide. The production and consumption of coffee in Ethiopia has a socio-economic importance and it is both local and export market destined produce. It has a major contribution to the economic development in Gross Domestic Production and Foreign exchange earnings. This study was conducted in South Western part of Ethiopia, major coffee growing woredas, selected as a sample to describe, analyze and explain the factors affecting coffee value chain performance in Ethiopia and to find possible ways enhancing the value chain's performance. Towards this end, this descriptive and explanatory study utilized a combination of multistage, 1st level sampling or area sampling and random sampling techniques to select 13 sample woredas from the total of 35 woredas from selected coffee growing regions. Primary data was collected by distributing a total of 288 questionnaires and collecting 208 questionnaires with a 76 % response rate. Secondary data was gathered for Forex earning from export and GDP contribution from 2007 – 2016. The study employed quantitative analysis through questioner and secondary data. Findings of the study identified that the existing agronomic practices of coffee, government policy and regulation in place for the subsector and the role of financial institutions are contributing to the performance of coffee value chain in terms of Gross Domestic Production and Foreign exchange earnings. Finally, constraints in efficiency of production of coffee, the role of government policy and regulation in creating favorable marketing environment to value chain actors, support of financial institutions in encouraging coffee related investments, services provided by market institutions (Ethiopian Commodity Exchange) and the role of non-government organizations in alleviating obstacles in the value chain performance are areas that need greater attention in order to robust coffee value chain performance in Ethiopia.*

***Key words: -*** *Coffee, Value, Chains, Performance, Factors.*

# CHAPTER ONE

# INTRODUCTION

## 1.1 BACKGROUND OF THE STUD BACKGROUND OF THE STUDY

Agriculture is the primary activity in Ethiopia, where about 84 percent of the country's population engaged in various agricultural activities and generates its income for household consumption to sustain its livelihood. Moreover, the country generates the lion share of its foreign currency earnings from the sales/export of agricultural commodities abroad and is an important socio-economic factor in Ethiopia in contributing to GDP, increasing the income and profit of households, providing employment opportunity, consumption and export of the country. Above all, the sector is believed to be the main source of capital to be accumulated for the process of establishing the future industrialized Ethiopia, which again shows the determinant role played by the sector to bring about sustainable economic development for the country in the years to come.

Production of high value and marketable commodities such as coffee is crucial as this subsector of agriculture is highly labor intensive. It contributes towards better income generation of households and as a result to contribute towards increasing foreign currency earning to the country and GDP. Thus, coffee is an important crop for Ethiopia in terms of economic development.

Coffee is grown by about 25 million farmers worldwide, (International Coffee Organization, 2014), 80% of whom are smallholders making it an important socio-economic factor in producing countries. Coffee is an important agent of development, providing a livelihood for millions of people around the world, generating cash returns in subsistence economies and, since coffee production and harvesting are labor-intensive, providing an important source of rural employment, for both men and women.

Coffee is remarkable for being produced in almost all non-arid countries in the tropics. Over 50 countries produce coffee in significant amounts; in many of these, earnings from coffee exports are of vital importance to the country's balance of payments. Furthermore, with minimal exceptions, coffee is produced in developing countries, including a significant number of least developed countries (LDCs). Consumption, on the other hand, takes place in industrialized countries and Brazil, the second largest coffee consuming country in the world behind the USA.

In terms of international trade, coffee is the most valuable tropical agricultural product. According to (International Coffee Organization, 2014), Export revenue of coffee producing countries in coffee year 2012/13 is preliminarily estimated at US$19.1 billion.

Ethiopia is endowed with a good production environment for growing coffee with a combination of appropriate altitude, temperature, rainfall, soil type, and PH. Ethiopia is the center of origin for *Coffee Arabica*.


***Figure 1: Ethiopian Coffee Map***

Source: Screen Captured from (McCarthy, 2007)

Coffee is cultivated by over 4 million primarily smallholder farming households (CSA, 2012) and, with those employed in ancillary activities to coffee production, even more households are dependent on coffee for part of their livelihoods. It has been used income generation for that about 20 percent of the populations, directly or indirectly, depend for a living on coffee production and trading.

Ethiopia is the world's fifth largest coffee producer and Africa's top producer, with estimated coffee production of more than 450,000 tons and marketable supply of 334,000 metric tons in farm year 2012/13 (CSA, 2012).

The infogram showing latest facts and figures about the global coffee trade from the International Coffee Organization indicates the total production of coffee in Ethiopia has reached 6.4 million (60kg bags) in 2015/2016 coffee year.

Coffee is one of the most important traded commodities in the world and over the period 2003 to 2013, Ethiopia exported 3.2 million bags and earned USD 3.8 billion, making it the most important African coffee exporter and the tenth largest ex-porter in the world (International Coffee Organization, 2014). Its share of the international coffee trade that year was about 3 percent. Coffee is the most important export product of the country, accounting for about a quarter of the value of all exports in 2012.

There have been significant domestic policy reforms in the last decade that affected the structure and performance of the coffee value chain. First, from December 2008 onwards it became mandatory for private traders to sell their coffee through the Ethiopian Commodity Exchange (ECX), a new modern commodity exchange. ECX trades standard coffee contracts, based on a warehouse receipt system, with standard parameters for coffee grades, transaction size, payment, and delivery. The first level quality control is decentralized and undertaken in nine liquoring and inspection units in major production areas.

Though Ethiopia encompasses a potential opportunity to increase coffee production being endowed with suitable elevation, temperature, and soil fertility, indigenous quality planting materials, and sufficient rainfall in coffee growing belts of the country; average per hectare yield remains very low at 0.72 MT per hectare.

Post-harvest handling, milling, packing, warehousing, transporting and distribution have played their deterring role on production and trade of coffee in Ethiopia. However, the value addition process still ends at exporting the coffee. In this regard, coffee value chain analysis is an interesting process that has not been investigated much. Because, the researcher believed that this type of study will give us insights to the unexploited areas of value creation.

## 1.2 STATMENT OF THE PROBLEM

Ethiopia’s economy is largely commodity -based on exports of agricultural crops such as coffee with little or no processing involved. In order to accelerate sustainable and inclusive growth and development in Ethiopia there is an urgent need for fostering a new approach based on exploiting the full value chain potential of coffee in the country including inputs supply, processing, and marketing.

A review of literatures on the Ethiopian coffee value chain indicate that the sector has an enormous potential and opportunities for growth and rooms for significant improvements in its number of areas (International Coffee Council, 2015). Despite the progress made in the last two decades, the Ethiopian coffee value chain faces many challenges due to limited market outlets, limited efforts in market linkage activities and insufficient market information among actors (Dereje, 2007). Similarly, (Dendena, et al., 2009)argued that small scale, dispersed and unorganized producers are unlikely to exploit market opportunities as they cannot attain the necessary economies of scale and lack bargaining power in negotiating prices.

Besides, as identified by various literatures and surveys, for example (Birhanu, et al., 2013), (Dereje, 2007) and (Minten, et al., 2015), participants in the Ethiopian coffee value chain are numerous which include smallholder coffee farmers or state farms, primary collectors, suppliers, processors, service cooperatives, unions, exporters and various governmental institutions. Though, markets in Ethiopia have seemingly been governed by too many controls and requirements, the market reforms might have unintended consequences on market performance and coffee quality. The study suggested that a conducive liberalized environment where producers can choose market outlets, depending on their performance and services offered, might lead to lower costs in the marketing system that might benefit both individual producers and the country as a whole (Minten, et al., 2015).

As coffee farming in Ethiopia is dominated by poor small scale farmers, it was suggested that cooperatives can be used as tools to disseminate sustainable agricultural practices or sustainable farming models. But, it is still challenging as the unimproved low productivity and consequent low economic profitability of coffee farming value chain (International Coffee Council, 2015).

Despite benefits realized from the establishment of Ethiopian Commodity Exchange, the set-up of primary marketing centers had side-effects that might have affected system-wide transaction costs, as well as the quality of coffee. As indicated by (Minten, et al., 2015), a number of problems might have emerged in some areas because of this new policy. Decline in quality of the procured cherries in relation to the deterioration of the quality of cherries during storage at the market and during transportation to and from the market. Furthermore, the time of procurement and processing has become too long, and that because of the increased competition, processors had to buy lower quality coffee.

The coffee value chain in Ethiopia is weak in terms of linkages with industry, agro processing and value-addition downstream of farms, provision of farm inputs upstream, and poor post-harvest operations, storage, distribution and logistics. This has resulted in poor performance of the chain mainly on the targets of export earnings that the government has planned to attain.

Though the government of Ethiopia has made various efforts to exploit the potential benefits in the last two decades, still there are no value chain based efforts made in the country to understand the issues at the chain level, using large-scale representative surveys. The lack of updated representative information is a constraint for evaluations of projects, programs, and policies (Minten, et al., 2015).

As a consequence, the need for improving performance of coffee value chain is not sufficiently addressed in Ethiopia regardless of some efforts from the government to improve and support the sector. The existing and potential constraints of production, post-harvest handling and marketing such as input utilization, productivity, packing, warehousing and distribution have been played and will continue their deterring role on production, trade, and consumption of coffee in Ethiopia across the chain.

In fact, the performance of coffee value chain is affected by numerous pertinent issues downstream from supply utilization of inputs, the agricultural practices, trust between value chain actors, governance, marketing and their interdependency etc.

As an enquiry, the importance of identifying the determinant factors and analyzing the effects of the coffee subsector value chain has not been given much emphasis in the industry given its longstanding export performance. There is a need for better understanding and identification of the coffee subsector value chain constraints to analyze the improvements and enhance its future performance. In this regard, value chain analysis is essential to explain the connection between all the actors in a particular chain of production and distribution as it shows who adds value and where, along the chain. In addition, it helps to identify pressure points and make improvements in weaker links where returns are low (Schmitz, 2005).

Therefore, the aim of this proposed study is to find the weakest link of the chain and to narrow the information gap on the subject. In this regard, coffee value chain analysis is an interesting process that has not been investigated much in this specific study areas. Besides, to the best knowledge of the researcher, no empirical study has been conducted in Ethiopia that investigated the determinants and

effects of the coffee value chain. This study, therefore, was intended to bridge this theoretical and practical gap through investigation of both the downstream and the upstream components of the value chain.

## 1.3 RESEARCH QUESTIONS

The main research question and the sub research questions that this study intends to investigate have been presented below.

### 1.3.1 Main Research Question

What are the determinant factors of the coffee value chain in Ethiopia and to what extent the coffee value chain contributes to the Ethiopian economy in terms of GDP, foreign currency earning, income generation and sales volume?

**Sub-research Questions:**

1. How does an agricultural practice of coffee farming in Ethiopia affect the performance of its value chain?
2. How does government regulation in the coffee subsector affect the performance of its value chain in Ethiopia?
3. How does the role of market institutions (Ethiopia Commodity Exchange – ECX) affect the performance of coffee value chain in Ethiopia?
4. How does the role of financial institutions affect the performance of coffee value chain in Ethiopia?
5. How does the role of Non-Government organizations in coffee subsector affect the performance of coffee value chain?

## 1.4 RESEARCH OBJECTIVES

### 1.4.1 Major Research Objective

In light of the problem stated in this research, the major objective of the study is to describe the key determinants of coffee value chain performance in Ethiopia and analyze their effects in terms of improvements in GDP contribution, foreign currency earnings and coffee sales volume.

**Specific Research Objectives**

1. To analyze the effect of agricultural practices of on the performance of Coffee value chain in Ethiopia.
2. To investigate the role of government regulation on the performance of coffee value chain in Ethiopia.
3. To examine the role of market institutions such as ECX on the performance of Coffee value chain in Ethiopia.
4. To examine the role of financial institutions such as banks on the performance of Coffee value chain in Ethiopia.
5. To assess the role of NGOs in coffee subsector on the performance of coffee value chain in Ethiopia?

## 1.5 SIGNIFICANCE OF THE STUDY

The study will identify and analyze the Coffee value chain within the country from downstream in the value chain, the processes involved and final destination (upstream, consumption and exporting raw Coffee). It will also provide a holistic picture of the existing challenges, opportunities and entry points in the Coffee value chain in the study areas. Moreover, this study will provide information on the determinants of Coffee supply to the market and contributes to purposeful decisions in the subsector. Therefore, it can shade light on required efforts to enhance Coffee value chain at larger scale to bring about economic development in the subsector.

The information generated might also help a number of organizations including research and development organizations, traders, policy makers, producers, extension service providers, government and non-government organizations to assess their activities and redesign their mode of operations and ultimately influence the design and implementation of policies and strategies. Finally, it could also help different value chain actors to identify and analyze the new ways of stimulation improvement.

## 1.6 SCOPE OF THE STUDY

This study will cover conceptual and empirical findings of the existing Coffee value chain outline of Ethiopia. Though the study title sites analysis of determinants of coffee value chain performance in

Ethiopia, it's conducted focusing on the determinant factors related to various stakeholders in coffee value chain. This makes the scope of this study be limited to analysing the factors in terms of stakeholders only.

Stakeholders in Ethiopia's Coffee value chain (value chain operators, value chain supporters and value chain enablers) often work insufficiently together towards a sustainable and competitive value chain. It is due to the main challenges in: Agricultural practices, Finance, Market system, Labor, Brokers, Marketing, Processing, Productivity, Mechanization, Quality, Capacity strengthening, and Infrastructure.

Though different variables can affect the existing Coffee value chain performance in Ethiopia, the most determinant factors of Coffee value chain performance identified after a thorough validation through literature review and used for analysis in this study are Agronomic Practices of Coffee production, Role of Market Institutions (ECX), Role of Government Policy and Regulations, Role of Non-Government Organizations in the subsector and Role of Financial Institutions.

However, many literatures infer 'Trade policy of destination countries' and 'Trust among value chain actors' as variables that determine Coffee or food value chains performance often and will not be included in this research. The former is due to constraints in accessibility of data by the researcher for export destination countries of Coffee from Ethiopia and the latter: 'Trust among value chain actors' is replaced by 'Role of Ethiopia Commodity Exchange' by the researcher as Ethiopian Commodity Exchange is established aiming to create transparent and efficient market system for Agricultural products especially for Coffee, sesame and Pea beans. As a result, the scope of the study is limited within the stakeholder related factors only.

On the other hand, the geographic coverage of the study is on the South-Western part of the country focusing on Coffee cultivating Woredas of four major areas namely Limmu Kossa (Jimma), Bedelle, Guraferda (Bench Maji) and Ginbo (Kafa). Each area has Coffee growing woredas and data will be collected from smallholder farmers, commercial farmers and suppliers in primary markets established in the growing woredas. The sample woredas will be selected based on Coffee growing topography, volume of production and convenience purpose as these are main Coffee growing areas of Ethiopia. Due to strong spatial patterns in coffee production and because the population size is wide and the researcher has financial & time constraints, study areas are narrowed to the south western part of the

country. As a result, population size is determined to be in Woredas of four areas from 2 zones of Oromia and SNNP regions. Moreover, the study will be restricted to the period from 2007 to 2016 that gives ten years of observation.

Data will also be collected from value chain & market support actors in the subsector from Ethiopia Commodity Exchange members, Non-Government Organizations working in the subsector and Policy makers.

## 1.7 LIMITATIONS OF THE STUDY

Given that the study is cross sectional, it is important to consider different scenarios that has happened during the study period in order to have correct estimates. However, due to time and financial constraints, the study is limited geographically and did not consider other variables that might help to make the study more representatives in terms of wider ranges of area and time horizon. Due to strong spatial patterns in coffee production and because the population size is wide and the researcher has financial & time constraints, population size was determined to be in Woredas of four areas from 2 zones of both **Oromia** and **SNNP** regions: ***Limmu Kossa (Jimma), Bedelle, Guraferda (Bench Maji) and Ginbo (Kafa)***. Since Ethiopia has a wide range of diverse Agro Ecologies, Institutional Capacities, Agricultural practices and Environmental and Organizational conditions, the result of the study may have limitations to make generalizations and make them applicable country wide. However, it may be useful for areas with similar context as with the study areas, might add on the existing stock of knowledge and can be us as a reference for future research works.

## 1.8 ORGANIZATION OF THE STUDY

The paper has been arranged as follows. The above chapter, Chapter one, is about the introduction of the topic with a detail explanation, specifying research question and justification of the research problem, explaining the general and specific objective of the research, the, scope and limitations of the study. Chapter two is about purifying the idea with regard to theoretical and empirical literature reviews of the determinants of coffee value chain focusing on Ethiopian coffee export and its contribution. Chapter three focuses on the research design and methodology and specification of data sampling, data collection and analysis tools and techniques. Chapter four discusses about the findings

and the interpretation on what the implication is. Finally, chapter five summarizes the conclusions drawn from the findings and suggests useful as well as applicable recommendations.

# CHAPTER TWO

# REVIEW OF RELATED LITERATURE

This chapter is about purifying the idea with regard to theoretical and empirical literature reviews of the determinants of coffee value chain focusing on Ethiopian coffee export and its contribution. It deals with discussing the basic concepts of value chain, concepts guiding agricultural value chain, benefit of value chain in agricultural sector, markets and marketing, market channel, market performance, measuring value chain, developing value chain towards the benefit of the poor, market deriving development in coffee value chain, status of coffee production in Ethiopia and empirical reviews will be discussed.

## 2.1 THEORETICAL LITERATURE

### 2.1.1 Concepts and Definition of Value Chain

Various authors defined and described value chain in different terms. But all of them share some commonalities in their content of definition. For instance, as stated by (Martin, 2008), Chains composed of companies (or individuals) that interact to supply goods and services are varyingly referred to as production chains, value chains, filières, marketing chains, supply chains, or distribution chains. These concepts vary mainly in their focus, in the activity that is emphasized, and in the way in which they have been applied. However, they all describe the interactions of firms and processes that are needed to deliver products to end users, and they all aim to identify opportunities for and constraints against increasing productivity. Although it is impossible to make fine distinctions among these often-overlapping concepts, it is still worthwhile to provide some basic definitions.

A value chain describes the full range of activities required to bring a product or service through the different phases of production, including physical transformation, the input of various producer services and response to consumer demand (Kaplinsky & Morris, 2000). As such, value chains include the vertically linked interdependent processes that generate value for the consumer. In contrast, the term supply chain is used internationally to encompass every activity involved in producing and delivering a final product or service, from the supplier's supplier to the customer's customer. The primary focus of supply chains is thus on cost and efficiencies in supply, while value chains focus more on value creation, innovation, product development, and marketing. While both

concepts describe the same network of companies that interact to deliver goods and services, the value chain is essentially about value.

The issue is not so much about which approach is superior or preferable, since both can deliver improved business performance and productivity gains for the chain's participants (Feller, 2006). In fact, they argue precisely for the need to stop thinking of supply chains and value chains as different entities, but rather, for integration of the two.

Similarly, clusters are composed of collections of firms and institutions that perform many of the functions segmented and described in value chains. They describe both horizontal and vertical links between the various businesses and other organizations that are instrumental in producing a product (or closely related products) or service. Thus, they often incorporate elements of many value chains. The literature on clusters stresses the benefits of enterprise agglomeration and geographic proximity, placing relatively more emphasis on the local environment (both policies and institutions, public and private) and context in which it operates. In the "chain" concept, emphasis on the local environment is secondary, at best. Value chain literature tends to have less emphasis on external relations, while cluster analysis often omits the distribution of value generation among links in a chain (Martin, 2008).

Another concept related to the value chain is the Francophone filière (literally "thread" in English). The filière is used to describe the flow of physical inputs and services in the production of a final product, and is essentially similar to the modern value chain concept. Filière studies do not have a single unifying theoretical framework, and its practitioners have borrowed from different theories and methodologies for their analyses. The filière was initially used to study contract farming and vertical integration in French agriculture in the 1960s. It was, soon thereafter, applied to agriculture in developing countries (dealing mainly with local agriculture production systems and consumption). Over time, filière analysis focused more on how public institutions affect local production systems. The field has recently begun to deal more directly with issues of trade and marketing in order to discuss the workings of commodity chains within an increasing liberalized context (Feller, 2006).

Another concept which has been used to describe the value chain is that of global commodity chains, introduced into the literature by Gereffi during the mid-1990s. Gereffi's contribution has enabled important advances to be made in the analytical and normative usage of the value chain concept,

particularly because of its focus on the power relations which are imbedded in value chain analysis (Gereffi, 1994).

By explicitly focusing on the coordination of globally dispersed, but linked, production systems, Gereffi has shown that many chains are characterized by a dominant party (or sometimes parties) who determine the overall character of the chain, and as lead firm(s) becomes responsible for upgrading activities within individual links and coordinating interaction between the links. This is a role of 'governance', and here a distinction is made between two types of governance: those cases where the coordination is undertaken by buyers ('buyer-driven commodity chains') and those in which producers play the key role (Gereffi, 1994).

Value Chain, as opposed to the traditional exclusive focus on production, the concept stresses the importance of value addition at each stage, thereby treating production as just one of several value-adding components of the chain (UNIDO, 2009).

Agro-food value chains encompass activities that take place at the farm as well as in rural settlements and urban areas. They require input supplies (seeds, fertilizers, pesticides, etc.), agricultural machinery, irrigation equipment and manufacturing facilities, and continue with handling, storage, processing, packaging, and distribution activities. Other elements, such as power generation, logistics, etc., which form the chain environment, are also important factors affecting the performance of value chains (UNIDO, 2009).

The expression "farm-to-fork" is often used to describe food value chains. This means that a food product moves from upstream in the chain, where farmers grow and harvest it, towards the market – through intermediaries including producer organizations, processors, transporters, wholesalers and retailers – and on to the downstream level of consumers (Feller, 2006).

In general, an in-depth value chain analysis considers the following: (SNV, 2004). The economic costs along the value chain, where the most value added to the value chain, who the most important actors within the value chain are, the institutional framework of the value chain, where the bottlenecks are in the value chain? The market potential for growth, what size is the sector/chain? What is the potential for upgrading and what possible synergies do exist.

Value chain analysis is the process of breaking a chain into its constituent parts in order to better understand its structure and functioning. The analysis consists of identifying chain actors at each stage and discerning their functions and relationships; determining the chain governance, or leadership, to facilitate chain formation and strengthening; and identifying value adding activities in the chain and assigning costs and added value to each of those activities. The flows of goods, information and finance through the various stages of the chain are evaluated in order to detect problems or identify opportunities to improve the contribution of specific actors and the overall performance of the chain (UNIDO, 2009).

There are many ways of analyzing a value chain. For example, value creation can be disaggregated between each link in the chain, as well as within each link. It should be a goal of the value chain participants to be competitive and agile in terms of identifying and taking advantage of market opportunities. The factors determining value chain competitiveness are often contextual and should be reviewed when considering the value chain as a complete entity. These factors include, but are not limited to, the business environment, supporting and end markets, and inter-firm or firm-level cooperation (Reader, 2006).

As the methodology outlined in the book of (Kaplinsky & Morris, 2000), one will address the following issues, and begins with understanding the nature of final markets, which are increasingly the driver in many value chains: The point of entry for value chain analysis; Mapping value chains; Product segments and Critical Success Factors in final markets; How producers access final markets; Benchmarking production efficiency; Governance of value chains; Upgrading in value chains; Distributional issues.

## 2.2 KEY CONCEPTS GUIDING AGRICULTURAL VALUE CHAIN ANALYSIS:

### 2.2.1 Effective demand, Production, value Chain governance, Marketing cost and performance.

There are four major key concepts guiding agricultural value chain analysis (Kaplinsky & Morris, 2000). These are effective demand, production, value chain governance, and upgrading.

**Effective demand: -** Agricultural value chain analysis views effective demand as the force that pulls goods and services through the vertical system. Value chain analysis needs to examine barriers to the

transmission of information in the changing nature of demand and incentives back to producers at various levels of the value chain (Mauritius Sugar Producers'Association, 2010).

**Production:-** In agricultural value chain analysis, a stage of production can be referred to as any operating stage capable of producing a marketable product serving as an input to the next stage in the chain or for final consumption or use. A stage of production in a value chain performs a function that makes significant contribution to the effective operation of the value chain and in the process adds value (Anandajayasekeram, 2009). One of the aims of agricultural value chain analysis is to increase the quantity of agricultural production. Understanding the mechanisms of the agricultural production greatly help to design appropriate policy that bring more gain to farmers and the whole society at large. Such analysis struggles to deal with dynamic linkages between productive activities that go beyond that particular sector (Kaplinsky & Morris, 2000). By going beyond the traditional narrow focus on production, value chain analysis scrutinize interactions and synergies among actors.

**Value chain governance: -** Governance refers to the role of coordination and associated roles of identifying dynamic profitable opportunities and allocating roles to key players (Kaplinsky & Morris, 2000). Value chain governance ensures the repetitive interactions between actors along a value chain reflect organization, rather than randomness.

Value chain upgrading: - Upgrading refers to the acquisition of technological capabilities and market linkages that enable firms to improve their competitiveness and move into higher-value activities (Kaplinsky & Morris, 2000). Upgrading in firms can take place in the form of process upgrading, product upgrading, functional upgrading and chain upgrading. Empirical research in a number of countries and sectors, (Humphrey, 2002); (Humphrey, 2003); (Humphrey & Memedovic, 2006) provide evidence of the importance of upgrading in the agricultural sector.

Marketing efficiency: - Efficiency in marketing is the most used measure of market performance. Improved marketing efficiency is a common goal of farmers, marketing organizations, consumers and society. Most of the changes proposed in marketing are justified on the grounds of improved efficiency (Kohls, 1985).

Marketing channel: - Formally, a marketing channel is a business structure of interdependent organizations that reach from the point of product or origin to the consumer with the purpose of moving products to their final consumption or destination (Kotler, 2003). This channel may be short

or long depending on kind and quality of the product marketed, available marketing services, and prevailing social and physical environment (Islam, 2001).

Marketing Performance: - Market performance can be evaluated by analyzing costs and margins of marketing agents in different channels. A commonly used measure of system performance is the marketing margin or price spread.

Marketing costs: Marketing costs are the embodiment of barriers to access to market participation by resource poor smallholders. It refers to those costs, which are incurred to perform various marketing activities in the transportation of goods from producer to consumers.

Marketing margin: It is a commonly used measure of the performance of a marketing system (Abbot & Makeham, 1981). It is defined as the difference between the price the consumer pays and the price that is obtained by producers, or as the price of a collection of marketing services, which is the outcome of the demand for and supply of such services (Cramers & Jensen, 1982); (William & Robinson, 1990), and (Holt, 1993). Thus, under competitive market conditions, analyzing market margins is an important means of assessing the efficiency of price formation in and transmission through the chain.

### 2.2.2 Measuring Value Chain: how value itself is conceptualized and measured

Successful value chains add value to and deepen their operations while responding to market conditions in order to achieve growth and increase profitability (UNIDO, 2011).

There are three main sets of reasons in the book of (Kaplinsky & Morris, 2000): why value chain analysis is important in this era of rapid globalization – First, the very increasing importance of systemic competitiveness.

Secondly, efficiency in production is only a necessary condition for successfully penetrating global markets: it helps in understanding the advantages and disadvantages of firms and countries specializing in production rather than services, and why the way in which producers are connected to final markets may influence their ability to gain from participating in global markets. Trade policies in final markets have played a role here. But, participation in global markets is not just governed by trade policies in final market countries. It also reflects the strategic decision of the lead firms in the

value chains. They may have made a strategic decision to locate their activities in a particular country or region, perhaps to balance out the consequences of exchange rate movements or ethnic and nationality ties.

Thirdly, entry into global markets which allows for sustained income growth – that is, making the best of globalization - requires an understanding of dynamic factors within the whole value chain. It helps to explain the distribution of benefits, particularly income, to those participating in the global economy. This makes it easier to identify the policies which can be implemented to enable individual producers and countries to increase their share of these gains (Kaplinsky & Morris, 2000).

There are many ways to analyze or evaluate a value chain. Analysis can stem from research of secondary information, such as government or industry data, to interviews with industry participants. (Martin, 2008) It can also be derived from participatory market assessments and market observations. Once the information is gathered, numerous tools and processes help interpret and inform the resulting analysis.

In general, an in-depth value chain analysis considers the following (SNV, 2004): What are the economic costs along the value chain? Where is the most value added to the value chain? Who are the most import actors within the value chain? What is the institutional framework of the value chain? Where are the bottlenecks in the value chain? Where is there market potential for growth? What is the size of the sector/chain? What is the potential for upgrading? What possible synergies exist?

An approach consists of developing a stakeholder vision for the value chain, identifying and prioritizing the most relevant set of interrelated constraints, and then developing integrated upgrading strategies and practical development plans that create synergies and that can realistically realize the stakeholder vision for the value chain is also presented by (Neven, 2014) in its book. Three phases are developed in this book as an approach in the principles:

1. Measuring Performance: by comparing actual and potential performance of a value chain,
2. Understanding performance: which is identifying the core drivers of performance (the root causes of underperformance) and how value chain stakeholders and their activities are linked to each other and
3. Improving performance: selecting and upgrading activities and multilateral partnership that supports the strategy and can realistically achieve the scale of impact envisioned.

### 2.2.3 Benefit of Value Chain in Agricultural sector

Value chain analysis is essential to explain the connection between all the actors in a particular chain of production and distribution and it shows who adds value and where, along the chain. It helps to identify pressure points and make improvements in weaker links where returns are low (Schmitz, 2005).

The analysis consists of identifying chain actors at each stage and discerning their functions and relationships; determining the chain governance, or leadership, to facilitate chain formation and strengthening; and identifying value adding activities in the chain and assigning costs and added value to each of those activities. The flows of goods, information and finance through the various stages of the chain are evaluated in order to detect problems or identify opportunities to improve the contribution of specific actors and the overall performance of the chain (UNIDO, 2009).

### 2.2.4 Developing Value Chain Systems towards the benefit of Value Chain actors

Value chain analysis does not stop at the level of the firm or groups of firms. It also draws attention to the national system of innovation – the network of institutions which support economic actors. What they do impinges on the competitive performance of firms and groups of firms, and is also subject to the support and regulation provided by governments, whose actions, too, need to be located in value chain analysis (Kaplinsky & Morris, 2000).

The productivity and efficiency of agricultural value chains are basic to the success of rural economies and to the incomes of rural populations (Martin, 2008). Value chains compete globally and need to be competent. Issues of agricultural trade facilitation, export promotion, and competitiveness can be addressed by analysing and developing productive and efficient agricultural value chains to transform African agriculture into a profitable business by focusing on increased productivity and by linking farmers with more lucrative markets.

### 2.2.5 Development of Market Driven Coffee Value Chain

The challenges of Coffee marketing can be addressed through a better understanding of the linkages between the farmers, traders and other actors along the commodity value chain. The value chain

concept is a systems approach that draws from different disciplines; as a systems approach it combines component and functional relationships (Da Silva & De Souza Filho, 2007).

There are variety of approaches to conducting a value chain analysis. Some rely heavily on qualitative tools while others propose a combination of qualitative and quantitative tools in carrying out a value chain analysis. (Jon Hellin & Madelon Meijer, 2006), proposed that the value chain analysis should commence with delineating the value chain by creating a map of the market. This market map aids in building an understanding of different players or actors in an input or output value chain. Value chain mapping involves creating visual representation between businesses in value chains as well as other market players. It helps illustrate and understand the process that an agricultural commodity goes through from the farm gate until it reaches the final consumer.

The purpose of mapping is to outline the different stakeholders from "Crop-to-Cup" (Karthikeyan, 2015). This process includes various actors – coffee farmers, intermediaries like local traders, curers, exporters (international traders), roasters, retailers (like hotels, restaurants, and cafés), and finally, the consumers in the domestic and international markets.

A value chain description is also useful in identifying and categorizing key market players and support organizations. The value chain illustrates the different market channels that a product takes before reaching the final consumer. Therefore a value chain is an important tool to use for identifying bottlenecks, as well as possible opportunities that may not be apparent otherwise.

## 2.3 EMPIRICAL EVIDENCE

### 2.3.1 Status of Coffee Value Chain in Ethiopia

In the Notes of (MAFAP, et al., 2014) it is highlighted that the importance of coffee for the Ethiopian economy as well as for the many smallholder farmers whose main source of income is the sale of coffee. As the birthplace of coffee Arabica, Ethiopia is still a major producing country of high-value coffee. It has accounted, on average, for about 5% of gross domestic product (GDP), 10% of total agricultural production as in 2011, the country produced around 5% of world production and 39% of the total production of coffee in Sub-Saharan Africa (International Coffee Organization, 2014).

It is found out that Wholesalers and producers of coffee bean in Ethiopia seem to receive production incentives between 2005 and 2010, at 20% and 30% on average, respectively. However, such incentives derive from specific market practices: the oligopoly of coffee suppliers allows them to inflate prices at wholesale level, a "protection" that is transmitted through a cascade effect to producers.

It also showed that the introduction of the ECX system in 2008 did not seem to change this practice. On the contrary, as stated by (MAFAP, et al., 2014), it increased access costs and disconnected exporters from producers, which increased market power for coffee suppliers, while setting up a grading system that has to be reinforced to avoid the sale of overpriced coffee at ECX.

The market development gap is high, at 43%, due to very high impurity and weight losses along the value chain but also to over-valued exchange rate. This means that there is scope to increase domestic prices in the coffee value chain by adopting a lower exchange rate and improving the marketing system.

According to various literatures and surveys, In Ethiopian coffee value chain, the participants are numerous which include smallholder coffee farmers or state farms, primary collectors, suppliers, processors, service cooperatives, unions, exporters and various governmental institutions.

Since the establishment of the Ethiopia Commodity Exchange (ECX), in 2008, and introduction of a new grading and distribution system for coffee by the government and the ECX, the trading center for Ethiopian agricultural products such as coffee, maize, navy beans, wheat, and Sesame are traded via ECX (Kawamata, 2015). The coffee marketing in Ethiopia accomplished in the following transaction chain:

1. Primary level coffee transaction centers (PLCTC), It is a place where coffee farmers and suppliers transact coffee. They are located near to the coffee farms. Currently there are about 979 primary coffee marketing centers in the country.
2. Ethiopian Commodity Exchange (ECX), it is a secondary level where coffee transact in Ethiopia and is a national multi-commodity exchange that provides low-cost, secure marketplace services to benefit all agricultural market stakeholders and invites industry professionals to seek membership enabling them to participate in trading. ECX warehouses are located at 8 different parts of the country. The centers are in DireDawa,

Hawasa, Sodo, Bonga, Djimma, Bedele and Gimbi. The coffee transaction in Addis Ababa in open outcry.

3. International coffee market, Currently, More than 120 Ethiopian coffee Exporters are participating in processing and exporting coffee to all destinations of the world. Among these export companies 95% are private companies 5 are coffee growing farmers' cooperative unions and two of them are government enterprises. In 2010/11 the top five coffee export destinations for the country are Germany, USA, Saudi Arabia, Belgium and Italy.

As showed by (Tesfaye & Yonas, 2011), only 81,000 tons (27%) of total production reach Specialty Grade, but not necessarily prices. Around 31% of all Ethiopian Coffee Exports (Grade 1 – Grade 3) may reach Specialty Grade, but are sold at $US 2 to 4 less per kg compared to Kenyan, Colombian or Guatemalan equivalents grades. Besides, 32% of total exports is washed coffee and this segment is growing at 4% for the last 2 consecutive years. Ethiopia's Specialty Coffees (Sidamo, Yirgacheffee & Harar) are sold from 5 – 9 USD per kg FOB. Whereas the retail market price of these coffees are above US 50 per Kg. The share of the small scale producer is on the average 2.8% of the retail price.

High prices paid by consumers for specialty coffees of Ethiopia at specialty retail markets didn't be reach proportionally to farmers since they have only received little, i.e., 2.8% of the retail value.

As stated by (Birhanu, et al., 2013), Marketing of coffee starts on the farms by producers/farmers. Farmers are the main actors in the coffee value chain. They are involved in transporting of their product to the purchaser's site or give information to collectors. The starting price for the red cherries is first announced by the washing stations owned by cooperatives or private individuals. Local collectors buy red cherries and send immediately to washing stations. Since cooperatives are the owners of washing plants/station, they determine the starting price for a kilogram of fresh red cherries and are followed by private washing stations. During the 2009/10 coffee season, they set a price that ranged between 8 and 12 Birr/kg, to which private processors added up to 10 Birr/kg. The income is mostly spent on food items for household consumption. They sell on average 3 to 10 kg of coffee daily to local collectors in the village. The value addition and operational benefits in each stage of the value chain are determined to identify possible intervention areas. This analysis is conducted only by considering dry coffee export value chain from the area of coffee origin Keffa and Jimma.

With this challenge in mind, various literatures suggest way forward in Ethiopian coffee industry. Such as increasing production/productivity and consistent quality through use of appropriate technologies and improved post-harvest technologies; Traceability and transparency along the value chain; better international promotion of Ethiopian coffee; Access to capital both for coffee purchase (working capital) and long term investment; and Provision of special support to commercial coffee farms to enhance productivity as expansion.

It was also suggested that to improve the coffee market and trade structure, the government could focus more on the following policy works like improve the efficiency of the coffee grading system, ensuring that grading is done effectively between farm gate and wholesale would reduce the overall costs along the value chain; Refine the fees for the services provided by the Ethiopian Commodity Exchange (marketing, storage and sampling among others); Focus on improving the quality and traceability of coffee as well as the effectiveness of the marketing system. This would certainly lower access costs and offer incentives to supplier and exporters, preventing them from having to resort to market practices that create artificially high prices; Ensure better connection between farm-gate and exporters. This is especially true for high-quality coffee, for which value is lost in the opaque ECX system, as exporters do not fully trust the quality attributed by ECX. Better linkages between farm-gate level and exporters would ultimately lead to high prices for producers that would not derive from coffee suppliers' oligopolistic behavior.

It is also identified that Stakeholders in Ethiopia's Coffee value chain (value chain operators, value chain supporters and value chain enablers) often work insufficiently together towards a sustainable and competitive Value chain. It is due to the main challenges in: Agricultural practices, Finance, Market system, Labor, Brokers, Marketing, Processing, Productivity, Mechanization, Quality, Capacity strengthening, and Infrastructure.

## 2.4 DEFINITION OF VARIABLES

Different variables can affect the existing Coffee value chain performance in Ethiopia. However, thorough validation through literature review and expert advice the most determinant factors of Coffee value chain performance are identified and used for analysis in this study. These variables are Agronomic Practices of Coffee production, Role of Market Institutions (ECX), Role of Government

Policy and Regulations, Role of Non-Government Organizations in the subsector and Role of Financial Institutions.

For the subjective evidence of the performance indicators of the existing Coffee value chain, Improvements in GDP or annual contribution, improvements in annual Forex earning and improvements in annual Coffee sales volume will be considered.

However, many literatures infer 'Trade policy of destination countries' and 'Trust among value chain actors' as variables that determine Coffee or food value chains performance often and will not be included in this research. The former is due to constraints in accessibility of data by the researcher for export destination countries of Coffee from Ethiopia and the latter: 'Trust among value chain actors' is replaced by 'Role of Ethiopia Commodity Exchange' by the researcher as Ethiopian Commodity Exchange is established aiming to create transparent and efficient market system for Agricultural products especially for Coffee, sesame and Pea beans.

## 2.5 CONCEPTUAL FRAMEWORK

Concepts in food value chains like Coffee value chain describe it often with the expression "farm-to-fork" value chains. This means that a food product moves from upstream in the chain, where farmers grow and harvest it, towards the market through intermediaries including producer organizations, processors, transporters, wholesalers and retailers and on to the downstream level of consumers (Feller, 2006).

Other than the integration between intermediaries in the value chain, 'Governance' is one of the characterizing determinant factor in value chains (Gereffi, 1994).

Entry in to global markets and increased competiveness are considered as indicators of value chain performance. (Kaplinsky & Morris, 2000).

The conceptual framework for Coffee value chain determinants and effects on its performance is adopted as follows:

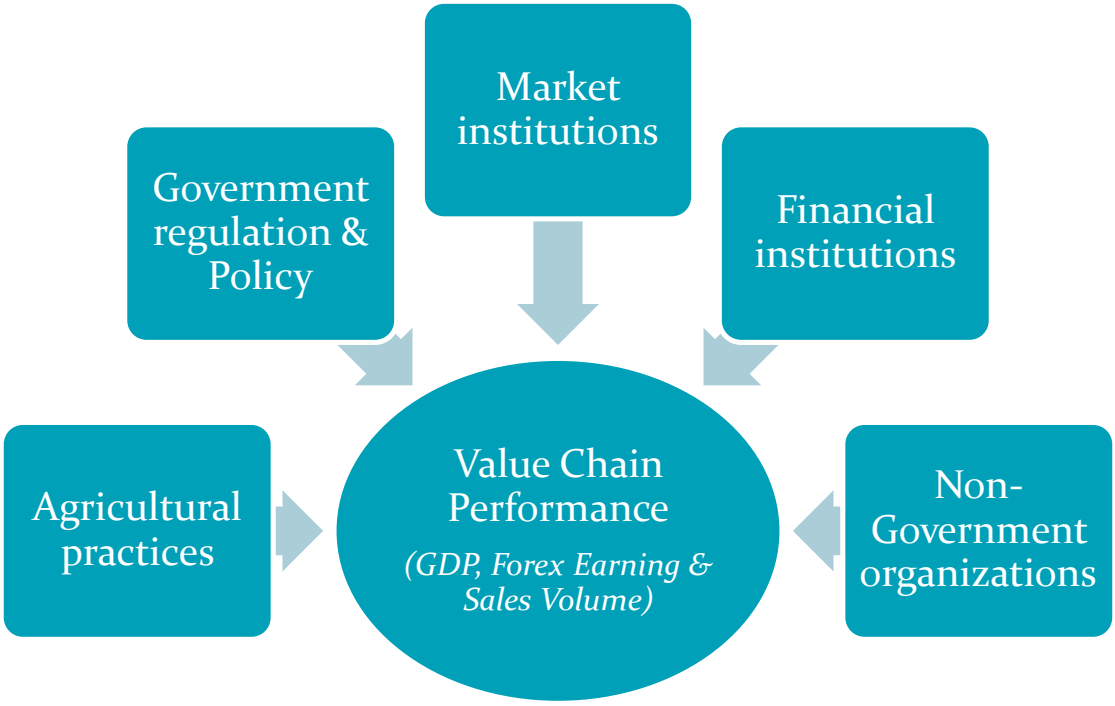


***Figure 2: How Value Chain Performance is affected by Factors;| Source: Researcher's own development.***

## 2.6 LITERATURE GAP

Based on the literatures reviewed, as an enquirer, the importance of identifying the determinant factors and analyzing the effects of the coffee subsector value chain has not been given much emphasis in the industry given its longstanding export performance. There is a need for better understanding and identification of the coffee subsector value chain constraints to analyze the improvements and enhance its future performance. In this regard, value chain analysis is essential to explain the connection between all the actors in the coffee value chain of production and distribution as it shows who adds value and where, along the chain. In addition, going beyond the mere identification of commonly known value chain factors, understanding these determining factors and the extent of influence they put on the performance of coffee value chain was not among the topics the researcher came to read so far.

# CHAPTER THREE:

# METHDOLOGY OF THE RESEARCH

This chapter discusses the research methodology used in the study including location and description of the study areas, data types and data sources, methods of sampling, methods of data collection and analysis.

## 3.1 RESEARCH DESIGN

The study is descriptive and explanatory as it was intended to describe and analyze the current state of the Coffee value chain in Ethiopia. The study employed quantitative analysis for the purpose of having a breadth of information through questioner and secondary data. The study is also cross-sectional as data was gathered at a single point in time from the respondents. The data was collected in May, 2017.

## 3.2 POPULATION AND SAMPLING

The country's main Coffee production areas are located in the tropical highlands of South and South-Western Ethiopia, in 182 woredas of Oromia (> 64%) and SNNP (35%) regions. There are 9 ECX Branches located in different areas namely: Saris (Addis Ababa), Bedelle, Bonga, Dilla, DireDawa, Gimbi, Hawassa, Jimma, and Wolayita Sodo. Except the Addis Ababa, Saris Branch, the remaining 8 branches are located near to the above mentioned 182 woredas. Furthermore, these branches have their own warehouses making a total of 19 in number. Due to strong spatial patterns in coffee production and because the population size is wide and the researcher has financial & time constraints, population size was determined to be in Woredas of four areas from 2 zones of both **Oromia** and **SNNP** regions: ***Limmu Kossa (Jimma), Bedelle, Guraferda (Bench Maji) and Ginbo (Kafa)***.

There are 1,650 Coffee traders within the 35 Coffee growing Woredas located in each of the four target areas mentioned above: Limmu Kossa (Jimma), Bedelle, Guraferda (Bench Maji) and Ginbo (Kafa).

Due to wide distribution of Coffee growing areas in two regions, major Coffee production areas selected as target and sample frame was based on geographic characteristics and convenience.

There are 346 Coffee traders (registered members) in Ethiopia Commodity Exchange which includes suppliers, exporters and intermediaries engaged in Coffee trade that are participating in any of the 13 coffee transaction sessions carried out on daily basis. There are 4 coffee transaction sessions carried out to trade coffee originating from those Woredas located in each of the four areas mentioned above. Traders participating in those 4 daily coffee transaction sessions associated with the transaction of coffee originated from those Woredas located in the four areas of Limmu Kossa (Jimma), Bedelle, Guraferda (Bench Maji) and Ginbo (Kafa), were also surveyed.

Finally, Government policy makers and Non-government organizations working in Coffee subsector were also targets of the survey conducted.

## 3.3 SAMPLING TECHNIQUES AND SAMPLE SIZE

Out of the 1,650 Coffee traders and among the 35 Coffee growing Woredas in each of the four areas namely: Limmu Kossa (Jimma), Bedelle, Guraferda (Bench Maji) and Ginbo (Kafa), a total of 13 sample Woredas were selected using multistage sampling technique as suggested by (Kothari, 2004) 1st level sampling or area sampling (which is a modified version of clustered sampling) was used to select sample woredas. Due to unavailability of sampling list or list of respondents questionnaire was used based on convenience method and Survey was conducted on primary markets nearby the sample Woredas where available to trade coffee as per the Government's policy and in which value chain actors can be reached for survey.

There are on average 30 to 40 Coffee traders (suppliers, exporters and intermediary members) that transact in coffee trade sessions. Out of the 4 daily sessions, one session was selected and surveyed randomly. In addition to these Coffee traders, government policy makers (Ministry of Trade) and non-government organization mainly engaged in supporting Coffee related activities like USAID and UNIDO were also included in the survey. Due to unavailability of sampling list or list of respondents questionnaire was used based on convenience method.

The sample size was determined using sample size calculator (table) with 95% confidence level. (Krejcie & Morgan, 1970). Total sample size is 322 drawn from target Woredas and said to be fair as 37% of 35 Coffee growing Woredas were surveyed and it was possible to collect 208 questionnaires with a 76 % response rate.

## 3.4 DATA COLLECTION

### 3.4.1 Primary Data

Survey was used to collect primary data from small holder farmers, farmers associations and cooperatives, private sector investors, commercial farmers, traders, exporters, policy makers and non-Government Organizations. Subjective evidence of both the determinant factors and performance indicators was captured through the survey.

Subjective evidence was also used on the existing agronomic practices of Coffee production, role of market institution (ECX), role of financial institutions in Coffee subsector, role of government regulation and policy and improvements on Coffee value chain performance in terms of GDP contribution, Forex earning and Coffee sales volume.

### 3.4.2 Secondary Data

For the objective evaluation of the effect of value chain determinants on its performance, secondary data were collected to evaluate its contribution on GDP, Foreign currency earnings and sales volume from Central Statistics Agency (CSA), National Bank of Ethiopia (NBE), Ministry of Trade (MoT), Ethiopia Commodity Exchange, Ethiopian Coffee and Tea Development and Marketing Authority and Ethiopia Revenue and Customs Authority.

### 3.4.3 Instruments used

Questionnaire was used to capture the subjective evidence of both the determinant factors and improvements in performance of Coffee value chain in Ethiopia. Five Questions under each of the variables of role of non-government institutions and role of financial institutions, agronomic practices of Coffee, role of market institutions and improvements in GDP, Forex and sales volume and role of government policy were used in the questionnaire. A 5 point Likert scale was used from 5- ’strongly agree’ to 1-’strongly disagree’. Face and content validity of the questionnaire was tested and pilot survey was also done on 34 randomly selected members of ECX (traders in Ethiopia Commodity Exchange) for further tuning. The 34 sample size is determined from a population of 443 total average number of traders per sessions for convenience as these are the average number of traders per each coffee trading session.

## 3.5 DATA ANALYSIS

Inferential statistics was used to analyze the data that was collected through the survey questionnaire. Mean scores were computed to show the most important, moderately important and least important determinants of the performance of Coffee value chain in Ethiopia. Multiple Regression analysis was used to test the aggregate effect of each determinant on the performance of value chain in Ethiopia.

Data for the objective evidence of implications in GDP contribution, Forex earning and Coffee sales volume was examined in order to evaluate the subsector's performance in chronological order. In order to compare coffee value chain performance in time series basis, average export rate of Coffee 2 years before and 8 years after the establishment of Ethiopian Commodity Exchange is considered as a measuring parameter by the researcher as coffee was used to be exported in a different manner before Ethiopia Commodity Exchange trading platform was established.

### 3.5.1 Reliability Test

The Cronbach's alpha value was computed to test the reliability of the measures used in the study with the following results.

***Table 3:1 - Reliability test of results***

| S. No. | Variables | Alpha value | No of items |
|---|---|---|---|
| **1** | Coffee agronomic practices | 0.736 | 5 |
| **2** | Role of marketing institutions | 0.714 | 5 |
| **3** | Role of government policies and regulations | 0.820 | 9 |
| **4** | Role of financial institutions | 0.910 | 5 |
| **5** | Role of NGOs | 0.864 | 5 |
| **6** | Contribution of Coffee value chain | 0.882 | 6 |
| | **Overall reliability** | **0.922** | **35** |

SOURCE: SURVEY RESULT, 2017

Cronbach's alpha for coffee agronomic practices was 0.683 and it was 0.644 for role of market institutions which was lower than the minimum threshold value of 0.70. Further testing was conducted and two items namely "adequacy of annual coffee supply" and "Ethiopia's coffee capture premium price in international markets" were excluded from the analysis.

Meanwhile, since the Cronbach's alpha value for all the variables involved in the study was greater than 0.70, the reliability of the data was found acceptable.

### 3.5.2 Reliability Test

The Cronbach's alpha value was computed to test the reliability of the measures used in the study with the following results.

***Table 3:2 - Normality test using skewness***

| **S. No.** | **Variables** | **N Statistic** | **Skewness** | | **Kurtosis** | |
|---|---|---|---|---|---|---|
| | | | **Statistics** | **Std. Error** | **Statistics** | **Std. Error** |
| **1** | Coffee agronomic practices | 206 | 0.172 | 0.169 | -0.812 | 0.337 |
| **2** | Role of marketing institutions | 202 | 0.326 | 0.171 | -0.504 | 0.341 |
| **3** | Role of government policies and regulations | 200 | -0.054 | 0.172 | -0.437 | 0.342 |
| **4** | Role of financial institutions | 204 | 0.258 | 0.17 | -1.144 | 0.339 |
| **5** | Role of NGOs | 202 | 0.214 | 0.171 | 0.427 | 0.341 |
| **6** | Effect on GDP, Forex, and Sales Volume | 200 | -0.643 | 0.172 | -0.262 | 0.342 |
| | **Valid N (list wise)** | **195** | | | | |

# CHAPTER FOUR

# RESULTS, DISCUSSION AND INTERPRETATION

This chapter presents the major findings of the study. It has two main sections. The first section deals with descriptive and inferential statistics of the samples. The second section presents results of performance analysis of the coffee value chain.

As this research was intended to describe the determinant factors of coffee value chain in Ethiopia and analyze their effects on GDP, Foreign currency earning and coffee sales volume. Specifically, there were five research questions in this study:- (1) How does an agricultural practice of coffee farming in Ethiopia affect the performance of its value chain? (2) How does government regulation in the coffee subsector affect the performance of its value chain in Ethiopia? (3) How does the role of market institutions (Ethiopia Commodity Exchange – ECX) affect the performance of coffee value chain in Ethiopia? (4) How does the role of financial institutions affect the performance of coffee value chain in Ethiopia? (5) How does the role of Non-Government organizations in coffee subsector affect the performance of coffee value chain? Data collected for each item was analyzed and the findings are categorized in to:

(a) Quantitative analysis which involved reliability test of measurements used in the study, , inferential statistics, and multiple correlation analysis were carried out.

(b) Quantitative analysis based on the secondary data from NBE, CSA, ERCA and ECX for dependent variable items in improvements in GDP, Foreign currency earning and coffee sales volume increment for the 2 years back before establishment of ECX trading platform. (2007-2016).

## 4.1 QUANTITATIVE ANALYSIS

### *I. Agronomic Practices of Coffee Production*

The descriptive statistics of the variables of the study is presented in the following section. The mean score of items that coffee agronomic practices cover is presented in the following table.

***Table 4:1 - The Mean score of items related to coffee agronomic practices***

| S. No. | Coffee agronomic practices | N | Mean |
|---|---|---|---|
| **1** | Availability of Coffee Production input supply | 208 | 3.6394 |
| **2** | Mechanization of Coffee Harvest | 208 | 3.101 |
| **3** | Efficiency of Coffee farming/production | 208 | 2.4087 |
| **4** | Availability of Coffee seedlings that meet customer demand | 208 | 3.4663 |
| **5** | Sustainability of sufficient coffee supply on yearly basis | 207 | 3.4251 |
| | **Valid N (list wise)** | **207** | |

SOURCE: SURVEY RESULT, 2017

The finding showed that the mean score of all items captured under "Coffee agronomic practices" is greater than the average score except the item that measures Efficiency of coffee farming/production. The coffee harvest input supply score is 3.64 which is above average. The input supply includes agricultural machinery, equipment and tools; fertilizers, pesticides, insecticides; irrigation systems and related equipment that would improve the production of coffee harvest. The result indicated that availability and sustainability of the supply side has shown improvement.

Agricultural inputs and industrial equipment for processing constitute important components of the agribusiness value chain. Inefficiency in the use of these inputs would have serious implications for the scope for increasing agricultural productivity and the supply of adequate output. Unlike the other items under the agronomic practices of coffee in Ethiopia, efficiency of coffee harvest scored lower than the average value. Efficiency in terms of higher production cost, efficiency in terms of lower yield per hectare, efficiency in terms of higher transportation costs are critical issues that should be addressed in the future.

The research question enquiring how agronomic practices of coffee production in Ethiopia does affect coffee value chain performance is answered here. Its contribution to the economy in terms of improvements in GDP, Forex earning and sales volume is 27.6%. The mean score of the availability of coffee harvest input supplies like fertilizer, pesticides and seedlings is nearly pass the average . Large yield gap (average yields 6.5 quintal/ha are far below potential), a tendency towards decreasing

yields, because of mono-cropping and soil fertility degradation, aged coffee trees and lack of new planation replacing the old ones are among the areas identified that require improvement in the review of Ethiopian coffee sector (Wageningen, 2013). Similarly, in the findings of this research, mechanization of coffee harvest practices scored a mean value of more than average slightly. It is worth noting that coffee production is high labor intensive and during pick seasons (September through December) coffee zone of SW Ethiopia hosts up to 500,000 seasonal laborers. The low productivity of agriculture is in part a function of the low-level of use of industrialized inputs. Less than 4 per cent of sub-Saharan Africa's arable land is irrigated (compared with nearly 39 per cent in South Asia and 11 percent for Latin America and the Caribbean), resulting in both lower and more unstable yields for most major staple crops. Similarly, the intensity of fertilizer and agricultural machinery use is one eighth to one tenth of that in South Asia (UNIDO, 2011).

Currently most Ethiopian coffee farmers do not use mechanization: use of tractors, sprayers, irrigation etc. except few commercial farmers. Producers of coffee in Ethiopia are not efficient. Coffee growers in Ethiopia are now suffering from high factors of productivity that is high input supply costs like labor and capital requirements related requirements for land preparation and post-harvest activities. Availability of coffee seedlings that meet customer demand and sustainability of sufficient coffee supply on yearly basis performing on average. Among the type of coffee varieties, "Lmmu" type is well known internationally for its flavor (Aroma) and "Yirgachaffee" type is best for its intense flavor known as flora and having fine acidity and rich body. Both types of coffee have bigger demand as many rosters are attracted to their fine and flavor and are willing to pay a premium price for it.

Agronomic practices in coffee are steps farmers incorporate in to their farm management systems to improve soil quality, enhance water use, manage crop residue and improve the environment through better fertilizer management. Selection of suitable variety, appropriate time of pruning, appropriate use of land (using mono cropping), use of technologies or mechanization for irrigation, weeding underpin increased productivity.

### *II. Role of Market Institutions (ECX)*

The mean score of items covered under the role of market institutions is presented in the following table.

*Table 4:2 - The Mean score of items related to the role of market institutions*

| S. No. | Role of Market Institutions (ECX) | N | Mean |
|---|---|---|---|
| **1** | Accuracy of ECX's coffee quality grading system | 206 | 2.9029 |
| **2** | Enables to discover a price of coffee which value chain actors fairly benefit | 208 | 2.1683 |
| **3** | Reliability and accessibility of coffee market information in ECX | 206 | 2.7282 |
| **4** | Existence of ECX promotes quality and availability of coffee supply | 208 | 3.3269 |
| **5** | Existence of ECX does not affect current coffee price negatively | 204 | 3.8824 |
| | **Valid N (list wise)** | **202** | |

SOURCE: SURVEY RESULT, 2017

According to the study, most of the items scored below the average. Its quality grading system, its effect in fair benefit share of actors, accessibility and reliability of its market data and its non-negative effect on current coffee price are not performing well. ECX's existence only promotes the availability of quality coffee supply. Respondents complained that the parking space and the sampling space in most warehouses such as Bedelle are not separate which in turn hinder the sampling operation and quality grading. The effectiveness of quality grading is heavily dependent on the effectiveness of the sampling process. Service dissatisfaction is almost inevitable if the sample drawn is not representative, although appropriate quality grading system is in place. Quality grading in general and the quest for re-sampling and re-grading to redress grading grievance have been found the major sources of dissatisfaction in all warehouse sites. ECX Clients and members are often dissatisfied with the result of the grade for their commodities. Grading staff of ECX claim that this happened because clients are aggregators of consignment from farmers who themselves collect from different sources. ECX graders claim that actual grading is far lower than what is normally expected by the clients because the base of clients' expectation is on physical appearance of commodities and traditional way of quality determination.

Most market actors share the idea that ECX shall revise its current grading system. They suggest that the grading system shall better involve limited number of classes with wider range taking the export

standard and requirements in to account. However, this view is not shared by suppliers as a wider range increases the within class quality variation although it reduces the between classes variation.

The researcher observed that the minimum required grading equipment are in place and collective decision is used for determining the grade of the commodity. The practice of collective decision making helps to prevent the limitations of an individual decision making. However, the laboratory equipment are not regularly maintained and calibrated.

The mean values of findings implied that ECX's performance of quality grading service in reflecting the actual coffee quality, discovering a price that fairly benefits all value chain actors and accessibility and reliability of market information is below average except in promoting supply of quality coffee to the market.

Although existence of commodity exchanges offer more stable (not fragmented and disorganized) and more ethical trading platforms where by farmers can benefit from fairer transactions and make wiser marketing and investment decisions that ensure their chance of survival and ECX's trading platform brought all buyers and sellers and aimed to create transparent and efficient marketing system that benefits all trading actors of a commodity, the existing marketing structure and services provided by the institution to value chain actors of coffee are not as virtuous as to improve the subsector's performance in terms of improvement in coffee sales volume and its existence neither contributes a positive and significant contribution to the economy. The quality grading system which does not reflect actual commodity grade, the reliability of market information disseminated in question, the negative influence in the price of coffee traded and its inability to discover a market price that fairly benefits market actors are among the plausible reason for its insignificant contribution in the value chain.

### *III. Role of Government Policy and Regulation*

The mean score of items covered under the role of government policies and regulations is presented in the following table.

Table 4:3 - The Mean score of items related to the role of government policy and regulation

| S. No. | Role of Government Policy and Regulation | N | Mean |
|---|---|---|---|
| **1** | Existence of government policy and regulation that enhances quality and supply of coffee | 207 | 3.5845 |
| **2** | Existence of government policy and regulation that enhances supply of coffee harvest inputs | 208 | 3.4279 |
| **3** | Existence of government policy and regulation that promotes market linkage of coffee trade | 206 | 3.3107 |
| **4** | Full and equal attention of government to coffee growing areas | 206 | 2.7476 |
| **5** | Significance of the current coffee marketing system in increasing its production | 205 | 2.7122 |
| **6** | Ability of coffee traders in reaching out market destinations | 207 | 2.8164 |
| **7** | Adequacy and accessibility of market information of the existing market structure of coffee | 208 | 3.6394 |
| **8** | Adequacy of coffee supply for value addition | 204 | 3.2353 |
| **9** | Availability of coffee seedling varieties suitable for value addition | 204 | 3.1912 |
| | **Valid N (list wise)** | **200** | |

SOURCE: SURVEY RESULT, 2017

In this study, there were nine questions used under the variable 'the role of government policy and regulation'. The mean value of existence of government policy that promotes and enhances the quality coffee supply, coffee supply inputs, market linkage, coffee supply for value addition and market information scored merely above average. On the other hand mean value of full and equal attention given to coffee growing woredas, government's significant role in increasing coffee production through the current marketing system and access given to coffee traders that enables them to reach market destinations scored lower than the mean value.

(Kaplinsky & Morris, 2000), stressed out the importance and impact of support and regulation in the value chain: "Value chain analysis does not stop at the level of the firm or groups of firms. It also draws attention to the national system of innovation – the network of institutions which support economic actors. What they do impinge on the competitive performance of firms and groups of firms, and is also subject to the support and regulation provided by governments, whose actions, too, need to be located in value chain analysis" (Kaplinsky & Morris, 2000).

### *IV. Role of financial institutions*

The mean score of items covered under the role of financial institutions is presented in the following table.

***Table 4:4 - The Mean score of items related to the role of financial institutions***

| S. No. | Role of Financial Institutions | N | Mean |
|---|---|---|---|
| **1** | Support of financial institutions in promoting mechanization of coffee harvest | 206 | 3.1893 |
| **2** | Support of financial institution in promoting market linkage and logistics of coffee trade | 206 | 3.165 |
| **3** | Availability of Investment incentives in marketing and value addition | 205 | 3.2293 |
| **4** | Accessibility of financial institutions in proximity to coffee value chain actors | 206 | 2.2524 |
| **5** | Availability of adequate finance to promote coffee harvest and trade related activities | 204 | 2.1176 |
| | Valid N (list wise) | 204 | |

SOURCE: SURVEY RESULT, 2017

In general, the findings of this study showed that all the mean score of items under the role of financial institutions scored merely above average. Support of financial institutions in promoting mechanization, market linkage, logistics and their accessibility of proximity to the value chain actors scored an average value.

Currently, the role of government policy and regulation in place and support of financial institutions towards the performance of coffee value chain is in its modest stage in the areas enhancing quality and adequate supply of coffee, promoting availability of supply of production inputs, promoting market linkage and access to market information, financial supports in coffee trade related investments and accessibility to value chain actors. Institutional support in enabling private sector environment, in addition to increasing productivity by applying science and technology, is stated as one of the difficulties of agribusiness in Africa in the book of (Yumkella et al., 2011). In Ethiopia there is no supportive policy that enables coffee value chain actors and traders to reach out market

destinations and the current market structure does not improve coffee production in terms of providing the necessary attention to all coffee growing woredas.

### *V. Role of non-governmental organizations*

The mean score of items covered under the role of nongovernmental organizations is presented in the following table.

***Table 4:5 - The mean score of items related to the role of non-governmental organizations***

| S. No. | Role of Non-governmental Organizations | N | Mean |
|---|---|---|---|
| **1** | Support of NGOs in increasing productivity and market linkage of coffee | 203 | 2.7488 |
| **2** | Support of NGOs in introducing innovative ideas of production, marketing and value adding of coffee | 203 | 2.8325 |
| **3** | Full attention given by NGOs to alleviate problems and obstacles in production and marketing of coffee | 202 | 2.995 |
| **4** | Priority given by NGOs to issues in fair benefit sharing and market linkage of coffee trade | 203 | 2.9704 |
| **5** | Support by NGOs that improves performance of coffee value chain | 203 | 2.8916 |
| | **Valid N (list wise)** | **202** | |

SOURCE: SURVEY RESULT, 2017

All items under the role of non-governmental organizations scored lower than the average value. The findings showed that non-governmental organizations‟ support in increasing and promoting productivity (providing input supply, introducing innovative ideas of production) and priority given to coffee value chain related obstacles in relation to marketing of coffee did not perform well.

Support by non-government organizations to the coffee subsector in Ethiopia scored a mean value lower than average although a statistically significant contribution to the economy is found out to be 8.8 %. Improvements in coffee's contribution to GDP, and Forex earning in exports and employment opportunities scored more than average and increments in sales volume of coffee in the past 2 years

(since the establishment of ECX trading plat form) scored lower than average value in the findings of this study.

Computations from secondary data showed that there was increment of contribution of agriculture, production and deposits of coffee made to ECX for the years between 2010 and 2012. There is no trend exhibited that either shows increment or decrement of contributions of coffee to the economy in terms of GDP, Forex earning and sales volume increment. Introduction of innovative and new efficient and effective ways of production of coffee and facilitation of market linkages are the untapped area of assignment by nongovernment organizations in coffee subsector that could result in increased benefit share of value chain actors.

### *VI. Improvements in contribution to the GDP, Forex earning and coffee sales volume*

The mean score of items covered under improvements in contribution of coffee value chain to the GDP, foreign currency earning, sales volume improvements, employment opportunity, etc. is presented in the following table.

***Table 4:6 - The mean score of items related to improvements in contribution to the GDP, Forex earnings and coffee sales volume***

| S. No. | Improvements in GDP, Foreign currency earnings and sales volume | N | Mean |
|---|---|---|---|
| **1** | Coffee production contribution in gross domestic production | 202 | 4.1535 |
| **2** | Contribution of coffee export in foreign currency earning | 203 | 4.3005 |
| **3** | Contribution of coffee production in employment opportunity | 203 | 4.0542 |
| **4** | Adequacy of coffee supply for both domestic and international markets | 202 | 3.6782 |
| **5** | Improvement of coffee supply in the past five years | 202 | 3.8119 |
| **6** | Improvement of export rate of coffee in the past five years | 203 | 3.803 |
| | **Valid N (list wise)** | **200** | |

SOURCE: SURVEY RESULT, 2017

Contribution of coffee value chain in improvements in GDP, Forex earning, employment opportunity and sales volume scored higher value than their mean values. This study showed that contribution of coffee to the economy is performing well and indicated that there are improvements.

### *VII. Mean scores of independent variables and the dependent variable*

The mean score of coffee agronomic practices, the role of market institutions, the role of government policies and regulations, the role of financial institutions, the role of NGOs, and the contribution of the coffee value chain to the economy is presented in the following table.

***Table 4:7 - The Mean score of the variables of the study***

| S. No. | Variables | N | Mean |
|---|---|---|---|
| **1** | Coffee Agronomic Practices | 206 | 3.1206 |
| **2** | Role of Marketing Institutions | 202 | 3.8523 |
| **3** | Role of Government Policies and Regulations | 200 | 3.1956 |
| **4** | Role of Financial Institutions | 204 | 3.1912 |
| **5** | Role of NGOs | 202 | 2.8871 |
| **6** | Effect on GDP, Foreign currency earning, employment opportunities, etc. | 200 | 3.9700 |
| | **Valid N (list wise)** | **195** | |

SOURCE: SURVEY RESULT, 2017

Average performance of agronomic practices of coffee, role of government policy and regulation and role of financial institutions towards in improvements in contributing to GDP, foreign earning and coffee sales volume increment scored above average. The role of market institutions and non-government organizations scored below the average value.

## 4.1.1 Inferential Statistical Test

### 4.1.1.1 Multicollinearity test

In order to conduct multiple regression test, a multicollinearity test was conducted as shown in the following table.

***Table 4:8 - Collinearity statistics***

| Model | Standardized Coefficient | t | Sig. | Collinearity Statistics | | |
|---|---|---|---|---|---|---|
| | *B* | *Beta* | | | *Tolerance* | *VIF* |
| (Constant) | 1.667 | | 6.443 | 0.000 | | |
| Coffee Agronomic Practices | 0.316 | 0.274 | 3.289 | 0.001 | 0.477 | 2.097 |
| Role of Marketing Institutions | -0.127 | -0.123 | -1.842 | 0.067 | 0.740 | 1.351 |
| Role of Government Policies and Regulations | 0.196 | 0.171 | 2.042 | 0.043 | 0.474 | 2.112 |
| Role of Financial Institutions | 0.217 | 0.272 | 3.658 | 0.000 | 0.598 | 1.671 |
| Role of NGOs | 0.119 | 0.111 | 1.699 | 0.091 | 0.779 | 1.283 |

SOURCE: SURVEY RESULT, 2017

The guideline regarding the variance inflation factors (VIF) and tolerance statistics (with tolerance being 1 divided by the VIF) vary. According to (Draper, et al., 1998), if the largest VIF is greater than 10 then there is cause for concern and tolerance below 0.1 indicates a serious problem. Since the VIF values of the variables considered in the study are lower than 10 and the tolerance values are greater than 0.10, there is no multi collinearity problem. Therefore, since the collinearity assumption is fulfilled, it is possible to run a multiple regression test.

#### 4.1.1.2 Correlation Analysis

### *I. Agronomic practices of coffee and contribution to the economy*

Correlation between coffee agronomic practices and the contribution of coffee value chain to the economy (Improvements in contribution to GDP, Foreign currency earning, coffee sales volume).

***Table 4:9 - Correlation between coffee agronomic practices and the contribution of coffee value chain***

| **The Role of Agronomic practices** | | **Coffee Agronomic Practices** | **Effect on GDP, Foreign currency, and Sales Volume** |
|---|---|---|---|
| **Coffee Agronomic Practices** | *Pearson Correlation* | *1* | *.525*** |
| | *Sig. (2-tailed)* | | .000 |
| | *N* | 206 | 200 |
| **Effect on GDP, Foreign currency, and Sales Volume** | *Pearson Correlation* | *.525*** | 1 |
| | *Sig. (2-tailed)* | .000 | |
| | *N* | 200 | 200 |

**. Correlation is significant at the 0.01 level (2-tailed).

SOURCE: SURVEY RESULT, 2017

The Pearson correlation between coffee agronomic practices and the contribution of coffee value chain to the economy was 0.525 with *p* value lower than 0.001. The strength of the correlation between the two variables was moderate and statistically significant. The coefficient of determination between the two variables was found to be 0.276. This implies that the contribution of the coffee value chain to the Ethiopian economy in terms of GDP contribution, foreign currency earning, and employment opportunity would be 27.6%. That means 72.4% of the contribution to the Ethiopian economy in terms of GDP contribution, foreign currency earning, coffee sales volume increment and employment opportunity has been explained by extraneous variables other than coffee agronomic practices.

### *II. Role of Market Institution and contribution to the economy*

Correlation between role of market institutions and the contribution of coffee value chain to the economy (Improvements in contribution to GDP, Forex earning, Coffee sales volume, employment opportunity).

***Table 4:10 - Correlation between role of market institutions and the contribution of coffee value chain to the economy***

| **The Role of Marketing Institution** | | **The Role of Marketing Institution** | **Effect on GDP, Foreign currency, and Sales Volume** |
|---|---|---|---|
| **The Role of Marketing Institution** | *Pearson Correlation* | *1* | *.214*** |
| | *Sig. (2-tailed)* | | 0.003 |
| | *N* | 202 | 197 |
| **Effect on GDP, Foreign currency, and Sales Volume** | *Pearson Correlation* | *.214*** | 1 |
| | *Sig. (2-tailed)* | 0.003 | |
| | *N* | 197 | 200 |

**. Correlation is significant at the 0.01 level (2-tailed).

SOURCE: SURVEY RESULT, 2017

The Pearson correlation between market institutions‟ role and the contribution of coffee value chain to the economy was 0.214 with *p* value greater than 0.001. The strength of the correlation between the two variables was weak and statistically insignificant. The coefficient of determination between the two variables was found to be 0.046. This implies that the contribution of the coffee value chain to the Ethiopian economy in terms of GDP contribution, foreign currency earning, and employment opportunity would be 4.6%. That means 95.4% of the contribution to the Ethiopian economy in terms of GDP contribution, foreign currency earning, coffee sales volume increment and employment opportunity has been explained by extraneous variables other than the role of market institutions in coffee (ECX).

### *III. Role of Government policy and regulation and contribution to the economy*

Correlation between role of government policies and regulations and the contribution of coffee value chain to the economy. (Improvements in contribution to GDP, Forex earning, Coffee sales volume, employment opportunity).

***Table 4:11 - Correlation between role of government policies and regulations and the contribution of coffee value chain to the economy***

| **Role of Government Policy and Regulation** | | **The Role of Government Policy and Regulation** | **Effect on GDP, Foreign currency, and Sales Volume** |
|---|---|---|---|
| **The Role of Government Policy and Regulation** | *Pearson Correlation* | *1* | *.490*** |
| | *Sig. (2-tailed)* | | .000 |
| | *N* | 200 | 198 |
| **Effect on GDP, Foreign currency, and Sales Volume** | *Pearson Correlation* | *.490*** | 1 |
| | *Sig. (2-tailed)* | .000 | |
| | *N* | 198 | 200 |

**. Correlation is significant at the 0.01 level (2-tailed).

SOURCE: SURVEY RESULT, 2017

The Pearson correlation between coffee agronomic practices and the contribution of coffee value chain to the economy was 0.490 with *p* value lower than 0.001. The strength of the correlation between the two variables was moderate and statistically significant. The coefficient of determination between the two variables was found to be 0.24. This implies that the contribution of the coffee value chain to the Ethiopian economy in terms of GDP contribution, foreign currency earning, coffee sales volume increment and employment opportunity would be 24%. That means 76% of the contribution to the Ethiopian economy in terms of GDP contribution, foreign currency earning, coffee sales volume and employment opportunity has been explained by extraneous variables other than the existing role of government and policy in coffee subsector.

### *IV. Role of Financial institutions and contribution to the economy*

Correlation between role of financial institutions and the contribution of coffee value chain to the economy (Improvements in contribution to GDP, Foreign earning, Coffee sales volume, employment opportunity).

***Table 4:12 - Correlation between role of financial institutions and the contribution of coffee value chain to the economy***

| **Role of Financial institutions** | | **The Role of Financial institutions** | **Effect on GDP, Foreign currency, and Sales Volume** |
|---|---|---|---|
| **The Role of Financial institutions** | *Pearson Correlation* | *1* | *.485*** |
| | *Sig. (2-tailed)* | | .000 |
| | *N* | 204 | 199 |
| **Effect on GDP, Foreign currency, and Sales Volume** | *Pearson Correlation* | *.485*** | 1 |
| | *Sig. (2-tailed)* | .000 | |
| | *N* | 199 | 200 |

**. Correlation is significant at the 0.01 level (2-tailed).

SOURCE: SURVEY RESULT, 2017

The Pearson correlation between coffee agronomic practices and the contribution of coffee value chain to the economy was 0.485 with *p* value lower than 0.001. The strength of the correlation between the two variables was moderate and statistically significant. The coefficient of determination between the two variables was found to be 0.235. This implies that the contribution of the coffee value chain to the Ethiopian economy in terms of GDP contribution, foreign currency earning, and employment opportunity would be 23.5%. That means 76.5% of the contribution to the Ethiopian economy in terms of GDP contribution, foreign currency earning, and employment opportunity has been explained by extraneous variables other than the role of financial institutions in coffee subsector.

### *V. Role of Non-government organizations and contribution to the economy*

Correlation between role of NGOs and the contribution of coffee value chain to the economy. (Improvements in contribution to GDP, Forex earning, Coffee sales volume, employment opportunity).

***Table 4:13 - Correlation between role of non-governmental organizations and contributions to the economy***

| **Role of Non-government Organizations** | | **The Role of NGOs** | **Effect on GDP, Foreign currency, and Sales Volume** |
|---|---|---|---|
| **The Role of NGOs** | *Pearson Correlation* | *1* | *.296*** |
| | *Sig. (2-tailed)* | | .000 |
| | *N* | 202 | 200 |
| **Effect on GDP, Foreign currency, and Sales Volume** | *Pearson Correlation* | *.296*** | 1 |
| | *Sig. (2-tailed)* | .000 | |
| | *N* | 200 | 200 |

**. Correlation is significant at the 0.01 level (2-tailed).

SOURCE: SURVEY RESULT, 2017

The Pearson correlation between coffee agronomic practices and the contribution of coffee value chain to the economy was 0.296 with *p* value lower than 0.001. The strength of the correlation between the two variables was weak and statistically significant. The coefficient of determination between the two variables was found to be 0.088. This implies that the contribution of the coffee value chain to the Ethiopian economy in terms of GDP contribution, foreign currency earning, and employment opportunity would be 8.8%. That means 91.2% of the contribution to the Ethiopian economy in terms of GDP contribution, foreign currency earning, and employment opportunity has been explained by extraneous variables other than role of nongovernment organizations in coffee subsector.

### 4.1.2 Multiple Regression Analysis

The aggregate effect of coffee agronomic practices, the contribution of marketing institutions, the role of government policies and regulations, the role of financial institutions, and the role of NGOs to the economy has been presented in the following table.

***Table 4:14 - Multiple regression test***

| Model | R | R Square | Adjusted R Square | Change Statistic | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| **1** | .610[a] | .373 | .356 | .373 | 22.449 | 5 | 189 | .000 |

SOURCE: SURVEY RESULT, 2017

The coefficient value or the beta weight of the effect of coffee agronomic practices, the role of marketing institutions, the role of government policies and regulations, the role of financial institutions, and the role of NGOs on the contribution of coffee to the economy in terms of improvements in GDP, foreign currency earning, sales volume increment and employment opportunities is found to be 0.61. This coefficient value is moderate and statistically significant as p value is lower than 0.001. The coefficient determination was found to be 0.356 with a significant p value which is lower than 0.001. The coefficient determination indicated that the combined effect of coffee agronomic practices, the role of marketing institutions, the role of government policies and regulations, the role of financial institutions, and the role of NGOs on the contribution of coffee to the economy was 35.6%. That means the contribution of the coffee value chain to the economy was explained about 35.6% of the time by agronomic practices, the role of marketing institutions, the role of government policies and regulations, the role of financial institutions, and the role of NGOs. It is apparently clear that 64.4% of contribution to GDP, foreign currency earning, coffee sales volume increment and employment opportunities can be explained by other variables that have not been captured in this study.

## 4.2 QUANTITATIVE ANALYSIS USING SECONDARY DATA

Under this section, findings from secondary data in relation to contribution of coffee value chain performance to improvements in GDP, Foreign currency earnings and coffee sales volume increment is presented. Since coffee was used to be traded in different manner before the establishment of ECX trading plat form, data for Forex earning from export and GDP contribution was computed back 2 years before ECX (2007 – 2016). As per the secondary data, production and trade (export) of coffee to the economy in terms of contribution to GDP, Forex earning and sales volume is summarized below.

***Table 4:15 - Export Value of Coffee***

| Year | Net Mass (Kg) | FOB Value (ETB) | FOB Value (USD) | Annual Change in USD |
|---|---|---|---|---|
| **2007** | 158,515,294.50 | 3,735,795,510.58 | 412,900,019.96 | 72,538,969.45 |
| **2008** | 179,996,766.10 | 5,398,700,489.18 | 557,302,470.19 | 144,402,450.23 |
| **2009** | 130,145,176.00 | 4,295,621,276.30 | 361,800,510.09 | (195,501,960.09) |
| **2010** | 211,981,096.36 | 9,854,961,810.75 | 676,642,645.53 | 314,842,135.43 |
| **2011** | 159,134,894.57 | 14,270,946,529.95 | 836,284,641.98 | 159,641,996.45 |
| **2012** | 203,562,743.10 | 15,703,121,552.43 | 878,958,532.18 | 42,673,890.20 |
| **2013** | 173,070,198.72 | 11,399,260,134.94 | 606,340,398.98 | (272,618,133.19) |
| **2014** | 196,280,159.94 | 15,798,385,429.83 | 784,288,083.06 | 177,947,684.07 |
| **2015** | 198,424,425.16 | 16,115,522,305.53 | 775,455,793.74 | (8,832,289.31) |
| **2016** | 195,431,048.42 | 15,917,371,143.67 | 725,389,694.47 | (50,066,099.27) |

SOURCE: ERCA

Computations from the secondary data collected showed that the change in GDP contribution, foreign currency earning and coffee sales volume was exhibited in both directions (in increment and in decrement).

In between the years 2007 – 2016, Ethiopia managed to earn a larger foreign currency amount in 2012 from export of coffee and the larger amount of coffee produced and traded across ECX was in 2010 as shown in the following figure.

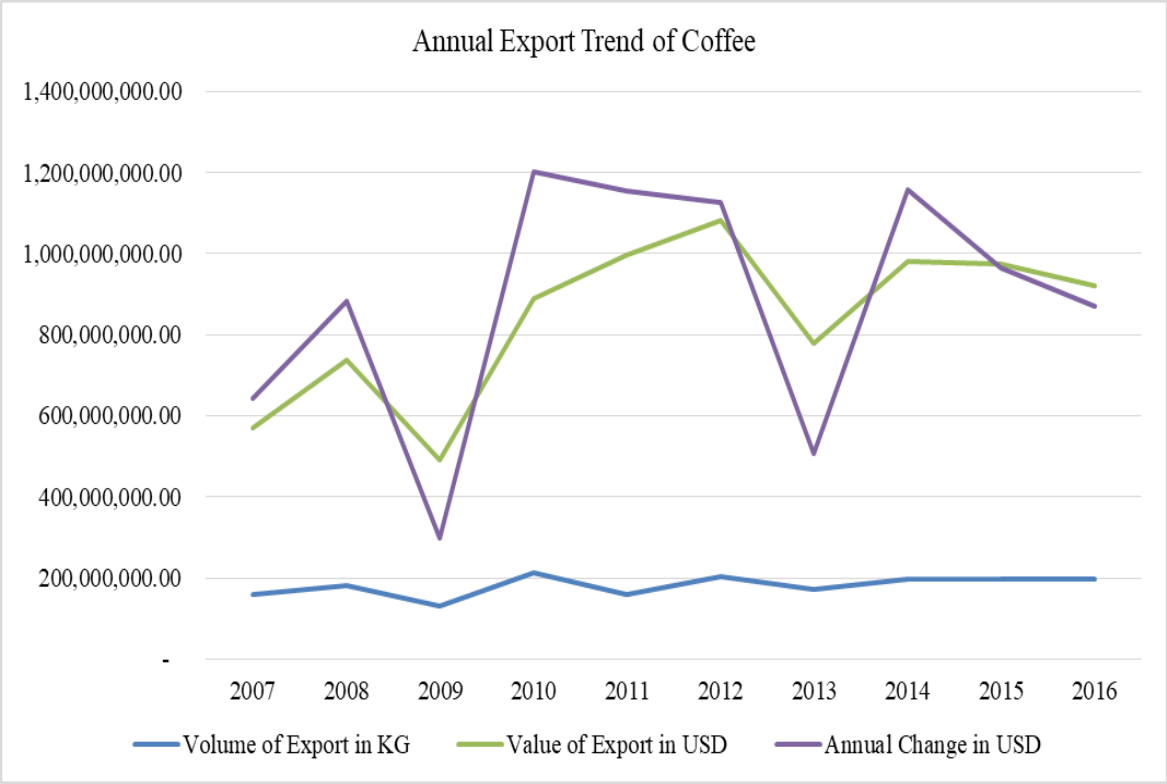


***Figure 3: Contribution of Coffee to GDP & FOREX***

As depicted in the figure above, in the year 2009, the foreign currency earnings from coffee had reduced by 35% due to the decline of agricultural commodities price in the international market. The financial crisis experienced in the USA and West Europe has been the major factor for the decline in the price of coffee in the international market which in turn adversely affects the foreign currency earrings of the country in addition to the 28% decline in the volume of coffee exported in the same period. From 2007 to 2016, the volume of coffee exported in the international market had increased by 23% and the value of foreign currency earned from coffee increased by 76%.

After the establishment of ECX, from 2009 to 2016, the volume of coffee exported in the international market had increased by 50% and the value of foreign currency earned from coffee increased by 100%.

# CHAPTER FIVE:

# SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATONS

This chapter summarizes the conclusions drawn from the findings and suggests useful as well as applicable recommendations.

## 5.1 SUMMARY OF FINDINGS

Understanding the value chain, identifying the determinant factors and analyzing their effect on their performance is inevitable if maximum output is expected from any food value chains. In general, an in-depth value chain analysis considers the economic costs along the value chain, identifying who and what most important actors in the value chain, the institutional framework of the value chain, where the bottlenecks are in the value chain and where the market potentials and what possible synergies do exist (SNV, 2004).

Production of high value and marketable commodities such as coffee, is crucial as this subsector of agriculture contributes towards better income generation of households and as a result to contribute towards increasing foreign currency earning to the country and GDP. This study used the following five research questions to describe and explain the determinant factors of coffee value chain performance in Ethiopia in terms of improvements in GDP, Forex earning and sales volume increment.

### *I. Agronomic practices of coffee*

The study showed that agronomic practices of coffee production in Ethiopia affects coffee value chain performance with contribution to the economy in terms of improvements in GDP, Forex earning and sales volume is positive and 27.6%.

### *II. Role of Market Institutions (ECX)*

As per the findings of this study, the services provided by ECX are not making a positive and significant contribution to the economy. Its contribution is only 4.6% in improvements in GDP, Forex earnings and coffee sales volume increment and the hypothesis that its existence and service deliveries

positively affects the performance of coffee value chain was rejected in the analysis of the data collected.

### *III. Role of government policy and regulation*

The existing government policy and regulation in place moderately improves and supports adequate supply of coffee production inputs, coffee outputs (production), and quality of coffee.

This implies that the contribution of the coffee value chain to the Ethiopian economy in terms of GDP contribution, foreign currency earning, coffee sales volume increment and employment opportunity would be 24%.

### *IV. Role of Financial Institutions*

In the findings of this study the role of financial institutions positively affect coffee value chain performance and contribute 23.5% to the economy in terms of improvements in GDP, Forex earning and coffee sales volume. However their contribution is weak. Coffee production and trading is high capital and labor intensive and support of financial institutions in investments and marketing of coffee is performing on average.

### *V. Role of Non-government Organizations*

As per the study, although a statistically significant and positive contribution to the economy is found out to be 8.8 %, the contribution is weak. Improvements in coffee's contribution to GDP, and Forex earning in exports and employment opportunities scored more than average and increments in sales volume of coffee in the past 2 years (since the establishment of ECX trading plat form) scored lower than average value in the findings of this study.

Contribution of coffee value chain in improvements in GDP, Forex earning, employment opportunity and sales volume scored higher value than their mean values. This study showed that contribution of coffee to the economy is performing well and indicated that there are improvements.

Findings of subjective data collected supported that agronomic practices of coffee, the role of government policy and regulation and the role of financial institutions are performing moderately towards in increasing performance of coffee value chain in Ethiopia.

## 5.2 CONCLUSION

Cultivation of coffee could be an important opportunity to increase smallholder's earnings provided they have timely access to the required inputs including the know-how to meet requirements of high value markets. Agronomic practices of coffee, the role of government policy and regulation and the role of financial institutions are among the determinant factors of coffee value chain in Ethiopia that affect its performance in terms of improvements in contributing to Gross Domestic Production, Foreign exchange earnings and coffee sales volume improvement. They positively affect coffee value chain performance in terms of improvements in GDP, Forex earning and employment opportunity and make a positive and statistically significant but weak contribution to the economy. Availability of coffee production input supplies, mechanization or use of technologies for land preparation and irrigation and availability of highly demanded coffee seedling varieties improves coffee value chain performance in Ethiopia on average rate.

Efficiency in production of coffee is still a drawback to Ethiopian coffee value chain actors especially to farmers due to a high production factor costs like labor and investment costs that restrict Ethiopia's coffee production from reaching its maximum potential yield. Coffee production in Ethiopia is currently rain fed and labour intensive (most weeding is usually done by labour). There is a huge capacity to increase yield by increasing inputs and by replacing old coffee trees with new plantations and improved seedling coffee varieties. The role of market Institutions (ECX) is not making a positive and significant contribution to the economy in terms of GDP contribution, Forex earnings of coffee export and sales volume.

Higher possible coffee sales volume increment was not exhibited because the existing agronomic practices of coffee is not efficient enough, the services provided by ECX are not reliable enough, lack of adequate support by non-government organizations in introducing innovative ways of production and marketing and unavailability of government policy in place that creates a conducive market structure and the necessary attention is not fully given to coffee growing woredas of Ethiopia.

Generally, the following can be concluded from the findings of this study:

I. The current agronomic practices of coffee in Ethiopia positively affect the performance of coffee value chain – availability of coffee production inputs such as fertilizers, pesticides,

mechanization and efficiency of productivity and availability of coffee seedlings that meet customer demand.

II. Marketing institution (ECX) plays a positive role in coffee value chain performance: - quality grading system of ECX, accessibility and reliability of market information, ECX's role in promoting production of quality grade coffee and price discovery that fairly benefits value chain actors.

III. Government policy and regulation in place that positively affects coffee value chain performance :- supportive government policy that contributes to adequate supply of production inputs, production of adequate coffee supply to the market, improves volume and quality of coffee, enhances market linkage, market information dissemination, establishing favorable marketing structure and full attention given to value chain actors.

IV. Financial institutions in coffee subsector play a positive role in coffee value chain performance: - in providing the necessary financial support in coffee trade related activities, value addition, investments and their accessibility to coffee value chain actors.

V. Role of non-government organizations which are engaged in coffee subsector positively affect coffee value chain performance:-in introducing new and innovative ideas that improve productivity of coffee, market linkage and quality of coffee produced.

## 5.3 RECOMMENDATIONS

In light of the findings of this study the following areas are identified for future improvement of coffee value chain performance in Ethiopia.

1. Agronomic practices of coffee: Constraints in efficiency of production of coffee which includes factors of production, land improvements, application of mechanization and utilization of appropriate supply inputs.

2. The existing market structure and services provided in relation to accuracy of quality grading system, reliability and accessibility of market information, negative influence in price discovery and support in discovering a price which benefits value chain actors.

3. Government policy and regulation which enables value chain actors to reach out market destinations, creates a market structure favorable for coffee production increment and full and fair attention to coffee growing woredas of Ethiopia.

4. Support and priority by non-government organizations in introducing innovative and new ideas of production, marketing and value adding in coffee subsector.

This study showed that there is a large potential for improvement in agronomic practices of coffee production, government policy and regulation, support by financial institutions, market institutions and nongovernment organizations.

Future researches on determinant factors and effects of coffee value chain performance like this study are needed in order to investigate other extraneous variables other than the items used in this study that could contribute for improvements in coffee value chain performance but the findings showed that these items still hold as factors.

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## APPENDIX: QUESTIONNAIRE

Dear respondent,

As part of my MA thesis at Addis Ababa University School of Commerce, I am conducting a survey that investigates the Performance of Coffee Value Chain in Ethiopia.

The participation in this research is completely volunteer. You may leave blank any questions you don't want to answer. Your response will remain confidential and anonymous. Data from this research will be kept confidential and reported only as a collective combined total. No one other than the researcher will know your individual answers to this questionnaire.

If you agree to participate, please answer the questions on the questionnaire as best you can. It should take approximately 10 minutes (ten minutes) to complete. Please return the questionnaire to the person who handed you.

If you have any questions, feel free to contact at 0912-17-07-38/ girma.bayou@yahoo.com.

Direction: Please check (√) and rate honestly based on what you actually given the statements using the following scales.

**5 – Strongly Agree 4 – Agree 3 – Neutral 2 – Disagree 1 – Strongly Disagree**

| A | Agronomic Practices of Coffee Production | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|
| 1 | Coffee production inputs (seedlings, fertilizer, pesticides, labor, ... etc) are sufficiently available | | | | | |
| 2 | Currently Coffee Picking practices are mechanized(supported by tools and machines, etc) | | | | | |
| 3 | Farmers produce Coffee efficiently (low cost of producing and high turnover of selling Coffee) | | | | | |
| 4 | Coffee types/varieties that meet customer demand are available in Ethiopia | | | | | |
| 5 | The current Coffee productivity (yield) is sufficient to sustain in the market | | | | | |
| 6 | There is enough production of Coffee every year | | | | | |

| B | Role of Market Institution (Ethiopian Commodity Exchange) | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|
| 1 | The quality standard implemented at ECX reflects the actual quality of Coffee | | | | | |
| 2 | Coffee is sold with price that benefits all actors involved (farmers, spot market traders, processors, and exporters) | | | | | |
| 3 | Ethiopia's Coffee captures premium price at world market | | | | | |
| 4 | Price information of Coffee disseminated by ECX is accessible and reliable | | | | | |
| 5 | ECX encourages production of high quality Coffee | | | | | |
| 6 | ECX service delivery system has no impact on the price of Coffee traded | | | | | |
| **C** | **Role of Government Policy and Regulation** | **5** | **4** | **3** | **2** | **1** |
| 1 | There is a supportive policy in place to improve the volume and quality of Coffee in Ethiopia | | | | | |
| 2 | There is proper government regulation in place that contributes to adequate supply of inputs | | | | | |
| 3 | There is favorable regulation in place that improves market efficiency at the output side | | | | | |
| 4 | Coffee growing areas have full attention and support from concerned Government body | | | | | |
| 5 | Coffee trading market channels enhance its productivity | | | | | |
| 6 | Farmers, traders and exporters can fully reach out Coffee market destinations | | | | | |
| 7 | Coffee trading is fully integrated and information is always available | | | | | |
| 8 | The current proclamation of Coffee value addition fully accommodates its potential | | | | | |
| 9 | Famers, traders, processors, and exporters can get Coffee that reflects their needs | | | | | |
| **D** | **Role of Financial Institution** | **5** | **4** | **3** | **2** | **1** |
| 1 | Financial institutions in Ethiopia (Banks both private and Government; Credit & Saving Institutions) encourage modern farming of Coffee by providing the necessary loan and subsidy | | | | | |
| 2 | Coffee trade actors: farmers, suppliers, exporters, processors can get access to finance to run Coffee related tasks like production, transportation and marketing | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 3 | Investments in Coffee mechanization, production, processing and marketing is encouraging in Ethiopia | | | | | |
| 4 | Financial institutions like Banks and Credit & Saving Institutions are available and accessible in proximity to Coffee farmers, suppliers, exporters and other market actors | | | | | |
| 5 | Financial institutions like Banks and Credit and Saving Institutions provide enough credit to run the business | | | | | |
| **E** | **Role of Non-Government Organizations(NGOs)** | **5** | **4** | **3** | **2** | **1** |
| 1 | Periodic interventions by NGOs is addressing Coffee harvest and marketing Problems | | | | | |
| 2 | Farmers, traders/suppliers, processors and exporters of Coffee are introduced to Innovative farming, distribution and marketing ideas by NGOs | | | | | |
| 3 | Challenges and obstacles in Coffee production and marketing are addressed through NGOs | | | | | |
| 4 | The idea of efficiency in Coffee production and marketing get priority in NGOs working on Coffee | | | | | |
| 5 | Coffee value chain is fully integrated and performing well due to support Provided by NGOs | | | | | |
| **F** | **Effect on Gross Domestic Production and Forex earning** | **5** | **4** | **3** | **2** | **1** |
| 1 | Coffee is growing in share as one of the leading contributors to the GDP of Ethiopia | | | | | |
| 2 | Coffee has been growing its share as one of the leading contributors to the foreign currency earnings of Ethiopia | | | | | |
| 3 | The Coffee sector is providing the most employment opportunity in the country. | | | | | |
| 4 | There is sufficient Coffee produce that meet International and domestic market demand | | | | | |
| 5 | Coffee production is in its increasing rate in the past five years | | | | | |
| 6 | Volume of annual Coffee export is increasing in the past five years | | | | | |