

**HONEY VALUE CHAIN ANALYSIS, IN GOMMA  
DISTRICT, JIMMA ZONE, SOUTHWEST  
ETHIOPIA**

**MSc. THESIS**

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**Jimma, Ethiopia**



## **DEDICATION**

I dedicate this thesis manuscript to my wife Mulunesh Negash, My son's Nahom, Yosef, and Yosnaf.

## STATEMENT OF AUTHOR

By my signature below, I declare and affirm that this thesis is my own work .I have followed all ethical and technical principles of scholarship in the preparation, data collection, data analysis, and compilation of this Thesis .Any scholarly matter that is included in the Thesis has been given recognition through citation. This Thesis is submitted in partial fulfillment for MSc. degree at the Jimma University .The Thesis is deposited in Jimma University Library and made available to borrowers under the rule of the library I solemnly declare that this Thesis has not been submitted to any other institution anywhere for the award of any academic degree, diploma, or certificate.

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## **BIOGRAPHICAL SKETCH**

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## **ACRONYMS AND ABBREVIATIONS**

AAFC	Agriculture and Agric -Food Canada
AGP	Agricultural Growth Program
ASE-AIFSP	Agri-Service Ethiopia, Amaro Integrated Food Security Program
CC	Contingency Coefficient
CSA	Central Statistical Agency
DA	Development Agent
DOoARD	District Office of Agricultural and Rural Development
DOoLFRD	District Office of Livestock and Fish Resource Development Office
ETB	Ethiopian Birr
GDP	Gross Domestic Product
OCSSCO	Oromia Credit and Saving Share Company
M.a.s.l	Meter Above Sea Level
MOA	Ministry of Agriculture
MSPA	Mauritius Sugar Producers Association
TLU	Tropical Livestock Unit
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development



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# HONEY VALUE CHAIN ANALYSIS IN GOMMA DISTRICT, JIMMA ZONE, SOUTHWEST ETHIOPIA

## ABSTRACT

*Agriculture plays significant role in the economic growth and poverty reduction, smallholder farmers need to improve their marketed surplus. The study was aimed to analyzing value chain of honey in Gomma district, Jimma zone southwest Ethiopia, with the specific objectives of identify major actors, their function, and linkage ,quantify margin share of honey value chain actors , identify factors affecting honey market supply and identify challenges and opportunities of honey value chain in study area . In order to attain these objectives, the study was used primary and secondary data. Primary data were generated by household survey using pre-tested semi structured questionnaire. The data were collected from 119 farmers ,64 traders , 10 cooperatives ,1 union and 21 consumers and analyzed using STATA software .Value chain actors identified in the study, include input Suppliers , producers, collectors, retailers, wholesalers, process, cooperative, union and consumers. Market channels were identified and the highest total gross margins are in the channel where honey passes through channel producer – wholesale – retailers – consumers in channel VII, which was 70.47 % .The highest Gross marketing margin of producers is in the channel where producer–cooperatives-consumers in II ,which account 66 % .The major challenges were application of chemicals , lack (High cost) of modern beehives and accessories, diseases and pest, pricing and cheating of traders on balance, lack of timely and sufficient market information , low price of commodities at harvest time, weak market linkages among value chain actors and less bargaining power of farmers in the market .While the opportunities were availability of potential flowering plants, Indigenous beekeepers knowledge & experience, existence of cooperatives and unions , availability of market demand throughout the year, growing number of buyers , existence of infrastructure and telecommunication, presence of established cooperatives and union .The result of the multiple regression model results showed that education level of household ,frequency of contact with extension agent, number of beehives owned, income of house hold head, type of beehives and cooperative membership significantly affected the volume of honey supplied to the market .Therefore ,policy aiming at increasing farmers access to modern inputs, developing and improving infrastructure, give attention to trainee beekeepers , Strengthening the linkage/interaction among value chain actors, using improved beehives, improving the income of farmers , motivational farmers to be a member of cooperatives ,increasing number of beehive to accelerate the chain 's development.*

**Keywords:** Honey, Marketing margin, multiple regressions, value chain, Gomma, Ethiopia.

# 1. INTRODUCTION

## 1.1 Back Ground

Global honey production in 2013 is estimated to be 1,663,797.73 tones and the five leading producer in the same year were China, Turkey, Argentina, Ukraine and Russia that contribute 450,300; 94,694; 80,000; 73,713; and 68,446 tones, respectively, to the total world production. In terms of trade, only about 31.2 % of global honey production entered international trade in the same year. Whereas, the total natural honey production in Africa in 2013 was only 10.2% (169,306.00 tones) of which, 1.55% entered international trade (Yoseph, 2016).

Ethiopia has huge potential for beekeeping because of its endowment with diversity in climate and vegetation resources that potentially favor beekeeping. Honey production in the country is most often related with the availability of natural forest and in Ethiopia, there is high possibility to produce good quality forest honey (Aravindakshan *et al.*, 2011). Beekeeping is a promising farm activity, which directly and indirectly contribute to smallholder income and national economy (Belets and Berhanu, 2014).

Commercializing smallholder agriculture is an indispensable pathway towards economic growth and development for most developing countries relying on the agricultural sector (Timmer, 1997). Honey production of the country is 47,706,101 kg with total number of beehives 5,902,624 traditional, 80,832 transitional and 205, 873 modern beehives (CSA, 2017). These have enabled Ethiopia to take the total share of honey production around 23.58% and 2.13% of the African and world respectively (Workneh and Puskur, 2011). The country is one of the top 10 producers of honey in the world, and it is the largest in Africa (USAID, 2012). According to MoA (2013), in Ethiopia over 1.5 million farm households are engaged in value chain of honey.

In addition, a significant number of people are engaged in production and trading of honey at different levels and selling of honey wines (local beverage *Tej*) which create job and self-employment opportunities for a large number of citizens. In addition, the sector is contributing around USD 2.7 million to the national economy of the country. Oromia regional state is one of the potential areas of honey production, which accounts 48.4% of the total bee colonies and 39.3% of the total honey production followed by Amhara and SNNP regional states, which accounts for 23.3% and 17.5% of the total bee colonies and 26.2% and 20.62% of total



honey production in the country, respectively. According to the report of CSA (2017), annually Oromia regional state produces 18,746,087 kg honey with an average production capacity of 6.3 kg per hive. The study area Jimma zone, also shares 4% of honey produced in the country with an average production capacity of 5.4 kg per hive (CSA, 2017).

Value-added agriculture has attracted considerable attention in recent years as a means to increase and/or stabilize farm incomes and to rejuvenate primary agriculture and the rural economy. The move to value-added agriculture is fundamentally market-driven. Value-added activities are born from the necessity to adapt to the wide-ranging changes affecting the agriculture and agro-food industry. These changes stem from many interacting factors; the quick expansion of agricultural trade and the resulting concentration in the agro-food industry, an increasingly segmented consumer base, shifting consumer preferences, changing demographics and income profiles, innovation in food and non-food uses of agricultural products and trade-related issues (Lambert *et al.*, 2006).

Modernization of agricultural value chain systems by which food flows from the farm gate to the consumer is both a consequence and cause of economic development. Commercial demand increases due to income and population growth, urbanization, and trade liberalization. Marketed supply simultaneously rises due to productivity improvements in production, post-harvest processing, and distribution systems (Minten and Reardon, 2008). The combination of increased commercial demand and supply induces the emergence of modern marketing channels employing sophisticated management methods, such as costly grades and standards or vertical coordination or integration of activities that profitably add value to raw commodities through transport, storage and/or processing. Farmers whose comparative advantage allows them to tap the latent demand of better-off or more distant markets made accessible by emergent agricultural value chains (AVCs) typically improve their productivity and profitability, thereby further stimulating commercial demand and supply through reinforcing feedback. The emergence and modernization of AVCs thus result from and contribute to economic development (Reardon and Timmer, 2007).

Despite the importance of honey for better income generation, smallholder farmers in the study area face a number of challenges related with marketing. Even if some farmers are continuously encouraged to increase supply of honey into the market, the low price offers

forced farmers to hoard their products waiting for a better price. The nature of the commodity on the one hand and lack of properly functioning marketing system on the other often resulted in lower producer's price. Lack of institutional linkages and lack of organized markets for honey still hinder the development of the sector. Besides the major constraints, particularly in the District include lack of modern beekeeping knowledge, shortage of trained manpower, shortage of beekeeping equipments, pests and predators, and inadequate research and extension services to support apiculture development program (Melaku *et al.*, 2008).

Therefore, understand the behavior of honey value chain in general, marketed surplus of honey and variables affecting them in particular and the can be of a great importance in the development of sound policies with respect to agricultural marketing and prices, imports and exports, and in meeting the overall rural and national development objectives of the country. Marketing margin, cost and benefit share analysis is an important aspect of agricultural marketing because of the policy implications of such studies. In subsistent farming, marketing margin analysis is useful in determining unfair pricing practices or receipt of economic profits by dominant merchants who normally have the bargaining power against the farmer.

## **1.2 Statement of Problem**

The analysis of aggregation and trading examines the flow of honey from their origin (producer) to their final destination. Several studies ,(Ayantu,2018) ,(kassa *et al.* ,2017),(Samuel,2014);(Betselot,2012);(Etenesh,2016).and(Assefa,2009)havecharacterized the honey marketing channels in Ethiopia, and have concluded that, the marketing system of honey being highly underdeveloped.

In addition, without an efficient marketing system, the surplus resulting from increased production benefits neither the producer nor the country (Jema, 2008). Reversing the trend; and realizing the growth potential that agriculture presents; will require concerted action throughout the supply chain, based on reliable information and collaboration between the private and public sectors. In such setting, value chain analysis is essential to understand the relationship and linkages among buyers and suppliers and a range of actors in between (Wenz and Bokelmann, 2011).

A review of literature in agro-industry value chain in Ethiopia indicates that the sector faces many challenges due to limited efforts in market linkage activities and poor market information among actors (Dereje, 2007; Dendena *et al.*, 2009). In the same vein, (Mamo 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.

In spite of the fact that markets are crucial in the process of agricultural commercialization, transaction costs and other causes of market imperfections could limit the participation of farm households in different markets (Sadoulet and de Janvry, 1995 as cited in Moti, 2007). This implies that markets could be physically available but not accessible to some of the farm households. In this context, 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).

Honey value chain in Ethiopia is described at which key players compete for honey in the market in terms of sales or purchases of honey. When using this approach, four main levels can be distinguished. At first level of the value chain, many beekeepers are engaged in honey production. Second level are direct buyers of honey like Honey collectors/traders, cooperatives, *tej* houses, and agribusinesses/processors that buy directly from beekeepers (e.g., Beza Mar buys honey from beekeepers in the Southern Nations, Nationalities and People's Region [SNNPR]). This level includes a high number of participants in the honey value chain who compete with each other in terms of the purchased quantity, quality, and price of honey (USAID, 2012).

Third level is Agribusiness companies that market honey in domestic and export markets and honey wholesalers in Addis Ababa (Mercato). This level of the honey value chain also includes multiple participants. Wholesalers in Addis Ababa (Mercato) and agribusiness companies that cater to domestic markets compete with agribusinesses that are engaged in sales for export markets in terms of quantity (reliable and timely supply), quality, and price of honey (USAID, 2012).

Fourth level are domestic retail honey sellers (supermarkets, retail stores) and honey exporters (agribusiness companies/ processors). Many participants at this level compete with each other in terms of quantity, quality, and price of honey. Additionally, some agribusinesses/processors that supply honey for export markets are also engaged in sales within the domestic market, so they compete with the wholesalers in Level 3(USAID, 2012).

According to (Bonbons *et al.*, 2013) market-oriented farmers play significant role in the rural agricultural sector. Therefore, they end up earning little margins while giant chain actors along the chain have the power to determine prices paid by the final consumer and thus extract huge marketing margins.

Despite the significance of honey in the livelihood of many farmers and is being both staple of honey; its value chain actors; their interrelationships among actors and with other institutions, and benefit distributions among major actors are not clearly known. Moreover, its profitability is also not known while there is production potential. If these problems are secured in the value chain, honey may become a new highly attractive demanded for the country.

Problems in honey value chain hinder the potential gains that could have been attained from the existing opportunities. In this regard, honey value chain analysis is an interesting process but as far as known very limited investigation has been done in the study area. Both buyers and sellers are usually doing not play collective roles towards one another and there are no honey processing activities habituated by the major actors. ( Ayantu 2018)

Under such circumstances, a study that focused on production and marketing problems, and roles and responsibilities of actors can play significant role towards the improvements of the existing system .In the study area market linkage service like; relation among traders, quality controlling mechanisms , market information and price settings are weak and it need critical investigation. Value chain analysis enables to understand the relationship among input suppliers, producers and other actors.( kinati et al., 2013)

The major constraints that affect apiculture in Ethiopia are lack of beekeeping knowledge, shortage of trained labor, shortage of beekeeping equipment, pests and predators, fires, pesticide threat and inadequate research works to support development programs .The cultural

beehives are not comfortable for sanitation and high level of production. Farmers are only selling honey and do not consider wax as means of income in their business. Based on these facts, even though Gomma district is believed to have a diversified type of vegetation and cultivated crops as potential for beekeeping activities, so far there is not enough research information on honey production system in the area.(Kinati et.al.,2013)

Moreover, little information is known about marketing system of honey in Ethiopia in general and Gomma district in particular. Therefore, this study was conducted to collect information on honey value chain and to fill the gap on honey value chain of Gomma district in south west of Ethiopia .The study is also used to suggest strategies for smooth integration between production and marketing by referring to root causes for supply and marketing problems starting from production until the consumption of the product.

### **1.3 .Research Questions**

This study has attempted to address the following key research questions:

1. Who are the major actors in honey value chain and what is their function and linkage?
2. How the benefits in value chain have been distributed across the chain?
3. What are the factors affecting volume of honey marketed surplus in the study area?
4. What are the honey value chain challenges and opportunities in study area?

### **1.4. Objectives of the Study**

The general objective of this study was to conduct value chain Analysis of honey in the study area.

Specifically this study was intended to

1. Identify the major actors, their function, and linkage
2. Quantify margin share of honey value chain actors
3. Identify factors affecting honey marketed supply in the study area; and
4. Identify challenges and opportunities of honey value chain in study area

### **1.5. Scope and Limitation of the Study**

Value chain analysis includes from producers to the end users covering wide range of geographical areas stretching from local to global markets. However, in this study the value chain analysis focuses only on Gomma district (Jimma zone of Oromia) as a case of reference.

Regarding the limitation of the study, due to shortage of logistics the study does not represent the whole value chain of honey in the country and it only focuses on the honey value chain that originates from major honey producing *kebeles* in the District. Hence, the generalizations of the finding are limited to the study area.

### **1.6. Significance of the study**

The smallholder producers have currently limited access to market due to poor product quality, market barriers, such as poor infrastructure, lack of favorable trade policy, and in order to increase their income and secure their livelihood. The implication is that their Shortage of finance and lack of collective bargaining power. Hence, this study attempted to generate information or evidence to all volunteer stakeholders who are willing to involve in production and marketing of honey.

Thus, there is strong need to help small producer in Ethiopia to achieve sustainable and fair access to honey market is a need to undertake research and generate information to identify alternative mechanisms. In which the honey producers and other actors can overcome the trade barriers, improve and add value to their products and become stronger negotiators in local regional and international markets thereby improving their income .The information generated from this research can be used by local practitioners as input in the formulation of honey development strategies and policies. In addition, it may also help researchers as an input for their further studies.

### **1.7. Organization of the Thesis**

This research paper is organized in five chapters. The first chapter presents introduction part of the thesis consisting of background, statement of the problem, research questions, objectives, scope, and limitations, and significance of the study. In chapter, two presents review of related literature. In chapter, three deals with research methodology. In chapter, four presents results and discussions. Summary, conclusions, and recommendations are set out in the last chapter.

## **2. LITERATURE REVIEW**

In this part of the study, concept in agricultural value chain, definitions and basic concepts of value chain, mapping the value chain, major concepts guiding agricultural value chain analysis, benefit of value chain in agricultural sector, developing value chain systems towards the benefits of the poor, honey production in Ethiopia. Theoretical framework, methodological framework, and review of empirical studies would discuss. Finally, it would be presented the conceptual framework of the study.

### **2.1. Concept in Agricultural Value Chain**

An agricultural value chain is usually defined by a particular finished product or closely related products and includes all firms and their activities engaged in input supply, production, transport, processing and marketing (or distribution) of the product or Products. Agricultural value chain analysis is a dynamic approach that examines how markets and industries respond to changes in the domestic and international demand and supply for a commodity, technological change in production and marketing, and developments in organizational models, institutional arrangements, or management techniques. The analysis should look at the value chain as a set of institutions and rules; as a set of activities involved in producing, processing, and distributing commodities; and as a set of actors involved in performing the value adding activities. Value chain analysis focuses on changes over time in the structure, conduct and performance of value chains, particularly in response to changes in market conditions, technologies and policies (Anandajayasekeram and Berhanu, 2009).

A value chain encompasses the full range of activities and services required to bring a producer or service from its production to its end use (Kaplinsky and Morris, 2000). Value chain includes process actors like input suppliers, producers, processors, traders and consumers. At one end are the producers – the farmer who grow the crop and raise the animal. At the other end are consumers, who eat, drink, and wear the final products. In the middle, are hundreds and thousands of individuals and firms, each performing one small step in the chain: transporting, processing, storing, selling, buying, packaging, checking, monitoring, and making decision? It also includes a range of services needed in the value chain including technical support (extension), business enabling and financial services, innovation and communication, and information brokering, etc. The value chain actors and service providers interact in differ-

ent ways starting from local to national and international levels (Bezabih and Mengistu, 2011).

## **2.2. Definitions and Basic Concepts of Value Chain**

### **2.2.1. Supply Chain**

Supply chain is the physical flow of goods that are required for raw materials transformed into finished products. Supply chain management is about making the chain as efficient as possible through better flow scheduling and resource use, improving quality control throughout the chain, reducing the risk associated with food safety and contamination, and decreasing the agricultural industry's response to changes in consumer demand for food attributes (Dunne, 2001).

### **2.2.2. Value Chain**

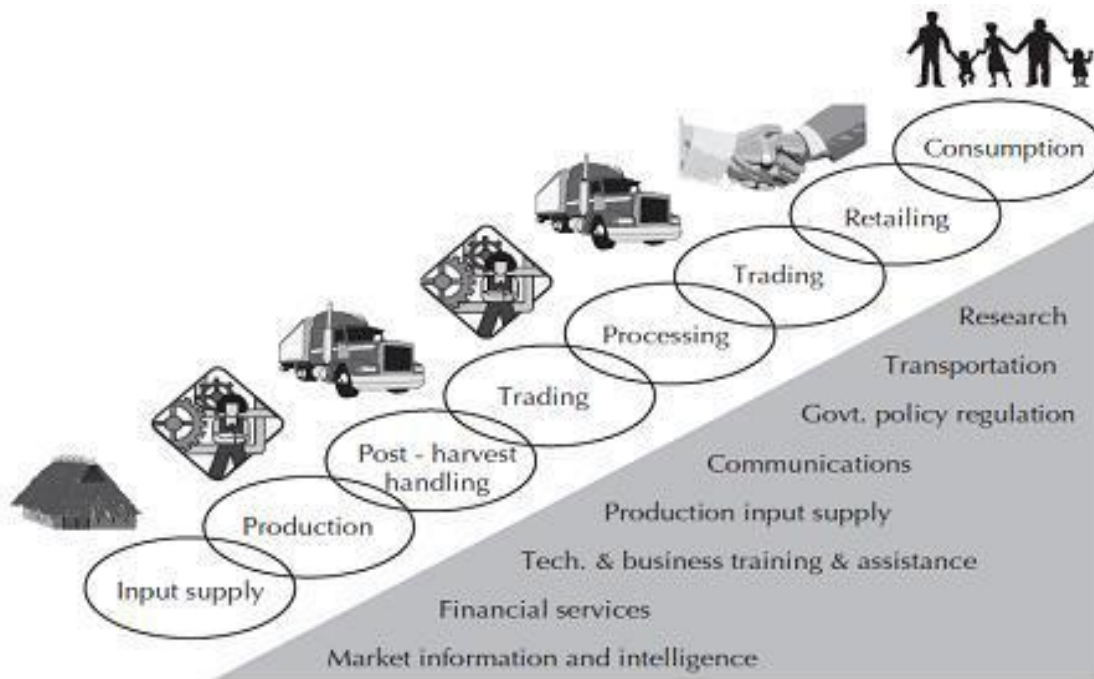
(Porter, 1985) indicates that value can be created by differentiation along every step of the value chain, through activities resulting in products and services that lower buyer's costs or increase buyers' performance. In much of the food production and distribution value chain, the value creation process has focused on commodities with relatively generic characteristics, creating relatively small profit margins. Value chains provide the framework for designing and implementing many developments programs and projects. Given a multitude of different arenas of application, geographical locations, commodity types, target groups, and desired outcomes, a variety of closely related conceptualizations of value chains has emerged (Stamm and Vons, 2011).

It is a group of companies working together to satisfy market demands. It involves a chain of activities that are associated with adding value to a product through the production and distribution processes of each activity (Schmitz, 2005). An organization's competitive advantage is based on their product's value chain. The goal of the company is to deliver maximum value to the end user for the least possible total cost to the company, thereby maximizing profit (Porter, 1985).

The value chain concept entails the addition of value as the product progresses from input suppliers to producers to consumers. A value chain, therefore, incorporates productive transformation and value addition at each stage of the value chain. At each stage in the value chain,



the product changes hands through chain actors, transaction costs are incurred and generally, some form of value is added .Value addition results from diverse activities such as bulking, cleaning, grading, and packaging, transporting, storing and processing (Anandajayasekeram and Berhanu, 2009).Value chains encompass a set of interdependent organizations, and associated institutions, resources, actors, and activities involved in input supply, production, processing, and distribution of a commodity. In other words, value chain can be viewed as a set of actors and activities, and organizations and the rules governing those activities. Value chain management is about creating the benefit at each link in the chain and a sustainable competitive advantage for the businesses in the chain. How value actually created is a major concern for most businesses. (Anandajayasekeram and Berhanu, 2009) as shown in Figure 1 for the case of a typical agricultural value chain.



**Figure 1:** Typical agricultural value chain and associated business development services  
 Source: Adapted from Anandajayasekeram and Berhanu (2009)

### 2.2.3. Market Chain versus Value Chain

Value chain differentiated from a production/supply chain because participants in the value chain have a long-term strategic vision, disposed to work together, oriented by demand. In addition, not by supply, shared commitment to control product quality and have a high level

of confidence in one another that allows greater security in business and facilitates the development of common goals and objectives (Hobbs *et al.*, 2000).

The goal of a value chain is to optimize performance in that industry using the combined expertise and abilities of the members of the chain. Successful chains depend on integration, coordination, communication and cooperation between partners with the traditional measure of success being the return on investment (Dunne, 2001)

Table 1: Enterprise relations: production chain versus value chain.

Factor	production market chain	Value market chain
Information follow	Little or none	Extensive
Principal focus	Cost/price	Value/quality
Strategy	Basic product (Commodity)	Differentiated product
Orientation	Led by supply	led by demand
Organizational structure	Independent actor's	Independent actors
,Philosophy	Competitiveness of the Enterprise	Independent actors

Source: Hobbs *et al.*, (2000)

### 2.3. Mapping the Value Chain

Mapping a value chain facilitates a clear understanding of the sequence of activities and the key actors and relationships involved in the value chain. This exercise is carried out in qualitative and quantitative terms through graphs presenting the various actors of the chain, their linkages and all operations of the chain from pre-production (supply of inputs) to industrial processing and marketing (UNIDO, 2009).

The mapping diagrams are prepared through an iterative process, which can be divided into two stages: First, an initial map is drawn which depicts the structure and flow of the chain in logical clusters. The main actors and the activities carried out at the local level, their links to activities at other domestic or foreign locations. The supporting services and their interactions, the links to the final market, and some initial indications of size and importance. The second stage is quantifying the value chain. This involves adding detail to the basic maps drawn initially (structure and flow). Depending on the level of detail needed for the research

entry point, this exercise may focus on elements such as size and scale of main actors; production volume; number of jobs; sales and export destinations and concentration (UNIDO, 2009). Value chain map is a visual representation of the relationship of actors in a value chain, it helps to understand the functional levels of the chain, and the operators associated with the levels including the linkage at different levels of the chain thus facilitating the analytical study of the chain with visual representation (Biruk, 2015).

The value chain map generally represents the micro and meso levels of the value chain actors. The basic functions and chain operators including the operational service providers constitute the micro value chain. There are also value chain supporters who are not dealing directly with the product meso level of the value chain. These include agencies that basically provide the support services level of as the chain operators but provide useful support services and are classified under the benefiting the whole value chain including the common interests of all the value chain actors. Value chain map helps understand the functional levels of the chain and the operators associated with the levels including the linkage at different levels of the chain, thus facilitating the analytical study of the chain with such visual representation (Bakhundole, 2010).

### **2.3.1. Value Chain Actors**

Value chain actors are those individuals or institutions that conduct transactions in a particular product as it moves through the value chain. These may include seed suppliers, farmers, traders, processors, transporters, wholesalers, retailers, and final consumers. In many cases, there is more than one type of source actor, as well as multiple channels that supply more than one final market. A comprehensive mapping, therefore, describes interacting and competing channels (including those that perhaps do not involve smallholder farmers at all) and the variety of final markets into which these connect (Hellin *et al.*, 2010). According to (KIT *et al.* 2006), the direct actors are those involved in commercial activities in the chain (input suppliers, producers, traders, consumers) and indirect actors are those that provide financial or non-financial support services, such as credit agencies, business service providers, government, NGOs, cooperatives, researchers and extension agents.

### **2.3.2. Enabling environment and service providers**

The enabling environment consists of the critical factors and trends that are shaping the value chain environment and operating conditions, but that may be amenable to change. These “enabling environment “factors are generated by structures (national and local authorities, research agencies). In addition, institutions (policies, regulations, and practices) those are beyond the direct control of economic actors in the value chain. The purpose of charting this enabling environment is not simply to map the status quo, but to understand the trends that are affecting the entire value chain and to examine the powers and interests that are driving change. This knowledge can help determine avenues and opportunities for realistic action, lobbying, and policy entrepreneurship (Hellin *et al.*, 2010). In most effective value chains, the actors who actually form the chain (those who conduct transactions in the main product) are supported by business and extension services from other enterprises and support organizations (e.g. seed suppliers and intermediaries). There is an on-going need for chain actors to access services of different types, both market and technical .The third component of the value chain map framework is concerned with mapping the services that support, or could potentially support, the value chain’s overall efficiency. The services that can potentially add value and determine chain actor’s adoption of a float oxen control practices and technologies include input supplies (seeds, livestock, fertilizers.), market information (prices, trends, buyers, suppliers), financial services (credit, savings, or insurance institutions), transport Services (such as for grain purchasing), quality assurance (monitoring and accreditation) (Hellin *et al.*, 2010).

### **2.3.3. Market and Marketing**

Market defined as an area in which one or more sellers of given products/services and their close substitutes exchange with and compete for the patronage of a group of buyers. Originally, the term market stood for the place where buyers and sellers gathered to exchange their goods, such as village square. A market is a point or a place or sphere within which price-making force operates and in which exchanges of title tend to be accompanied by the actual movement of the goods affected (Backman and Davidson, 1962). The concept of exchange and relationships lead to the concept of marketing. It is the set of the actual and potential buyers of a product. Conceptually, marketing visualized as a process in which ownership of

goods transferred from sellers to buyers who may be final consumers or intermediaries (Kotler and Armstrong, 2003).

**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 and Armstrong, 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 *et al.*, 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. Margin or spread can be useful descriptive statistics if it used to show how the consumer's price is divided among participants at different levels of marketing system (Mendoza, 1995).

**Marketing costs:** Marketing costs are the embodiment of barriers to have access to market participation by resource poor small holders. It refers to costs, which are incurred to perform various marketing activities in the transportation of goods from producer to consumers. Marketing costs includes handling cost (labor, loading and unloading, costs of damage, transportation) to reach an agreement, transferring the product, monitoring the agreement to see that its conditions are fulfilled and enforcing the exchange agreement (Holloway and Ehui, 2002).

**Marketing margin:** Marketing margin is the difference between the value of a product or a group of products at one stage in the marketing process and the value of an equivalent product or group of products at another stage. Measuring this margin indicates how much has been paid for the processing and marketing services applied to the product(s) at that particular stage in the marketing process (Smith, 1992).

Therefore, market margin is the price variation at different segments with the comparison of the final price to the consumer percentage of final weighted average selling price taken by each stage of marketing chain. Comparing the total gross marketing margin is always related to the final price or the price paid by the end consumer and then expressed as a percentage. A wide margin usually means high prices to consumers and low prices to producers (Mendoza, 1995).

Measuring value chain: A fundamental aspect of global value chain research is how ‘value’ itself is conceptualized and measured. According to (Gereffi 1999) profit, value addition and price markups are indications of income shares across value chain actors. Value-added shares can be calculated for different links in the chain. A second way to calculate value added is to look its distribution by each value chain actors of honey market and decomposing for each actor to get approximations of each value-added share.

Marketable surplus: It is the quantity of produce left out after meeting farmer’s consumption and utilization requirements for kind payments and other obligations (gifts, donation and charity) (Thakur *et al.*, 1997).

Marketed surplus: It shows quantity actually sold after accounting for losses and retention by farmers, if any and adding previous stock left out for sales.

Thus, marketed surplus may be equal to marketable surplus, it may be less if the entire marketable surplus is not sold out and farmers retain some stock and if losses are incurred at the farm or during transit (Thaker *et al.*, 1997).

#### 2.4. Major Concepts Guiding Agricultural Value Chain Analysis

There are four major key concepts guiding agricultural value chain analysis (Anandajayasekaram and Berhanu, 2009; and Kaplinsky and 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. Hence, value chain analysis need to understand the dynamics of how demand is changing at both domestic and international markets, and the implications for value chain organization and performance. Value chain analysis also 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 (MSPA, 2010).

Production: In agricultural value chain analysis, a stage of production can be referred to as any operating stage capable of producing a saleable product serving as an input to the next stage in the chain or for final consumption or use. Typical value chain linkages include input supply, production, assembly, transport, storage, processing, wholesaling, retailing, and utilization, with exportation included as a major stage for products destined for international mar-

kets. 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 (Anandajaya sekeram and Berhanu, 2009). Producing the required amount effectively is a necessary condition for responsible and sustainable relationships among chain actors. Thus, 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. For a long time, sector analyses have been used to measure the different economic aspects of production. However, sector analyses have not been without weaknesses. In particular, sector analysis tends to be static and suffer from the weakness of its own bounded parameters. Such analysis struggles to deal with dynamic linkages between productive activities that go beyond that particular sector (Kaplinsky and Morris, 2000).

Value chain governance: Governance refers to the role of coordination and associated roles of identifying dynamic profitable opportunities and apportioning roles to key players (Kaplinsky and Morris, 2000). Value chains imply repetitiveness of linkage interactions. Governance ensures that interactions between actors along a value chain reflect organization, rather than randomness. The governance of value chains emanate from the requirement to set product, process, and logistic standards, which then influence upstream or downstream chain actors and results in activities, roles and functions. It is important to note that governance and coordination sometimes appear as synonymous or interchangeable terms in the literature. Already in the 1980s, (Williamson 1985) used the term governance to define the set of institutional arrangements in which a transaction is organized. As Gereffi's work on Global Commodity Chains and the governance role appeared, the term coordination took on a new meaning, basically, the vertical organization of activities. The application of private ordering/contract /governance leads naturally into the re conceptualization of the firm not as a production function (in the science of choice tradition) but as a governance structure (Williamson, 2002).

According to (Raikes *et al.*, 2000), trust-based coordination is central for goods and services, whose characteristics change frequently, making a standardized quality determination for the purposes of industrial coordination difficult. This applies to the Manufacturing industry as well as agro-food chains. It is possible to identify in one Industry several coordination forms used by different firms where the choices rely on the trust existent between the firms. Value

chains can be classified into two based on the governance structures: buyer-driven value chains, and producer-driven value chains. Buyer driven chains are usually labor-intensive industries, and so more important in international development and agriculture. In such industries, buyers undertake the lead coordination activities and influence product specifications. In producer-driven value chains, which are more capital intensive, key producers in the chain, usually controlling key technologies, influence product specifications and play the lead role in coordinating the various links. Some chains may involve both producer and buyer driven governance (Kaplinsky and Morris, 2000) yet in further work (Gibbon and Ponte, 2005) has argued that governance, in the sense of a clear dominance structure, is not necessary a constitutive element of value chains. Some value chains may exhibit no governance at all, or very thin governance. In most value chains, there may be multiple points of governance, involved in setting rules, monitoring performance and/or assisting producers.

Chain governance should also be viewed in terms of richness“ and reach“, i.e., in terms of its depth and pervasiveness (Evans and Wurster, 2000). Richness or depth of value chain governance refers to the extent to which governance affects the core activities of individual actors in the chain. Reach or pervasiveness refers to how widely the governance is applied and whether or not competing bases of power exists. In the real world, value chains may be subject to multiplicity of governance structure, often laying down conflicting rules to the poor producers (MSPA, 2010).

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 and Morris, 2000). Upgrading in firms can take place in the form of process upgrading, product up grading, functional upgrading, and chain upgrading. Upgrading entails not only improvements in products, but also investments in people knowhow, processes, equipment, and favorable work conditions.

## **2.5. Benefit of Value Chain in Agricultural Sector**

It is an innovation that enhances or improves an existing product, or introduces new products or new product uses. This allows the farmer to create new markets, or differentiate a product from others and thus gain an advantage over competitors. In so doing, the farmer can ask a



higher premium (price) or gain increased market share or access. Adding value does not necessarily involve altering a product it can be the adoption of new production or handling methods that increase a farmer's capacity and reliability in meeting market demand. Value-added can be almost anything that enhances the dimensions of a business. The key is that the value-adding activity must increase or stabilize profit margins, and the output must appeal to the consumer (AAFC, 2004).

Value chain is useful as a poverty-reduction tool if it leads to increase on and off farm rural employment and income. Increased agricultural productivity alone is not a sufficient route out of poverty within a context of globalization and increasing natural resource degradation. A focus on post-harvest activities, differentiated value added products and increasing links with access to markets for goods produced by low income producers would appear to be the strategy open to smallholders (Lundy *et al.*, 2002).

## **2.6. Developing Value Chain Systems towards the Benefits of the Poor**

In recent years, the pro-poor growth approach has become one of the key concerns of developmental organizations. The focus of the approach lies in the promotion of economic potentials of the poor and disadvantaged groups of people (OECD, 2006). The main aim is to enable them to react and take advantage of new opportunities arising because of economic growth, and thereby overcome poverty (Berg *et al.*, 2006).

The promotion of value chains in agribusiness aims to improve the competitiveness of agriculture in national and international markets and to generate greater value added within the country or region. The key criterion in this context is broad impact, i.e. growth that benefits the rural poor to the greatest possible extent or, at least, does not worsen their position relative to other demographic groups (GTZ, 2006).

Pro-poor growth is one of the most commonly quoted objectives of value chain promotion. In recent years, the need to connect producers to markets has led to an understanding that it is necessary to verify and analyze markets before engaging in upgrading activities with value chain operators. Thus, the value chain approach starts from an understanding of the consumer demand and works its way back through distribution channels to the different stages of production, processing and marketing (GTZ, 2006). The value chain approach seeks to identify long-term solutions to reduce the vulnerability of developing countries to fluctuating world

market prices or trade shocks. It does not just focus on adding value to existing traditional commodity exports (in other words, diversifying the same product), but also on promoting alternative products. Another characteristic of the approach is that it does not solely concentrate on functional dimensions such as supplying appropriate inputs, or applying good agricultural processing, handling and distribution practices. It emphasizes the importance of institutional arrangements, or rather governance issues, along the value chains that link and coordinate producers, processors, and distributors of a certain product. Moreover, this aspect covers authority and power relationships that determine how financial, material and human resources are allocated and flow within the chain (Gereffi *et al.*, 1994).

Dynamic value chain systems respond to market shifts by developing and transferring knowledge to intermediaries and producers, so that they can adapt and maintain a competitive market position over time. Vibrant value chain systems grow and continuously incorporate new businesses, generating ever-increasing jobs, income, and assets. In this manner, value chain systems can have the potential significantly reduce poverty for large numbers of poor people (Alexandra and Mary, 2006).

## **2.7. Honey Production in Ethiopia**

Honey production in Ethiopia has recently attracted the attention of various agencies because of its potential to help revitalize the Ethiopian economy, reduce poverty, and conserve forests (Jinanus and Tamiru, 2016). Ethiopia believed to possess high potential in producing the honey. The honey produced in Ethiopia is expected to become a major commodity for acquiring foreign currency to improve the Ethiopian economy. Although Ethiopia does not have sufficient infrastructure for transporting and storing goods, the long shelf life of honey makes it an attractive export for the country. The country already earns an average of 420 million ETB (35 million USD) annually from the sale of honey (Gidey and Kibrom, 2010).

In Ethiopia, there are generally two honey-harvesting seasons: The major one that lasts from October to November and the secondary one from April to June. However, in addition to these major harvesting periods, there are many small harvesting periods, which depend on the type of flowering plants and rainfall patterns in different agro ecologies, which experienced beekeepers and local people easily associate the harvesting season with the botanical origin of honey in their locality (Jinanus and Tamiru, 2016).

Beekeeping contributes to peoples' livelihoods almost in every country. Still there are people who depend for their livelihood on hunting wild colonies that plays crucial in rural livelihoods worldwide. It is believed that beekeeping plays a significant role and one of the possible options to the smallholder farmers in order to sustain their livelihood. It does not only serve as a source of additional income, but also quite a number of people entirely depend on beekeeping for their livelihood. Beekeeping as an activity offers great potential for development in almost all African countries (Jinanus and Tamiru, 2016).

Beekeeping is easy and cheap to start and it is an important cash crop with ready local market. Beekeeping requires little land and therefore is an ideal activity for small-scale resource-poor farmers (Jinanus and Tamiru, 2016). Beekeeping gives local people an economic incentive for the retention of natural habitats such as forests and therefore is an ideal activity in any forest conservation. Attractive income generated from beekeeping. However, the financial outcome will depend on many factors such as skill and experience of the practitioner; the market available to the beekeepers as well as botanical resources available; climate and other factors (Nicola, 2009).

## **2.8. Theoretical Framework**

Value chain approach is used by many organizations across the globe. Following the pioneering contributions of (Porter, 1985) that focused on how individual firms can create value and build up their competitive advantage and (Gereffi 1994) who focused primarily on the economic governance patterns in global value chains, different institutions and individuals applied value chain approach.

A value chain approach presents a number of features, which can serve to expand financial services into underserved rural areas. (Charitonenko *et al.*, 2005) and an analysis of the entire value chain needs to be conducted in order to better understand the extent to which financing is a constraint, where in the chain it may be a constraint, and whether there are other pre disposing conditions impeding the access and best use of capital (Jansen, 2007).

However, developing countries face many challenges that hinder from achieving value chain development like available resource, physical infrastructures, and institutions (Scott, 1995). Therefore, a key condition for producers to be included in successful value chains is that they

have access to market information and possess the ability to translate it to market intelligence (Biruk, 2015).

Actors networking value chain theory suggests that the value chain map should be simple, easy, and clear. However, the real world can be much more complex than mapped because of the involvement of different actors and channels. In order to simply understand the ground situation; the map should simply describe the flow of inputs, product and information among the actors. The analysis also should recommend on how to strengthen the relationship among the actors (Kaplinksy and Moris, 2000).

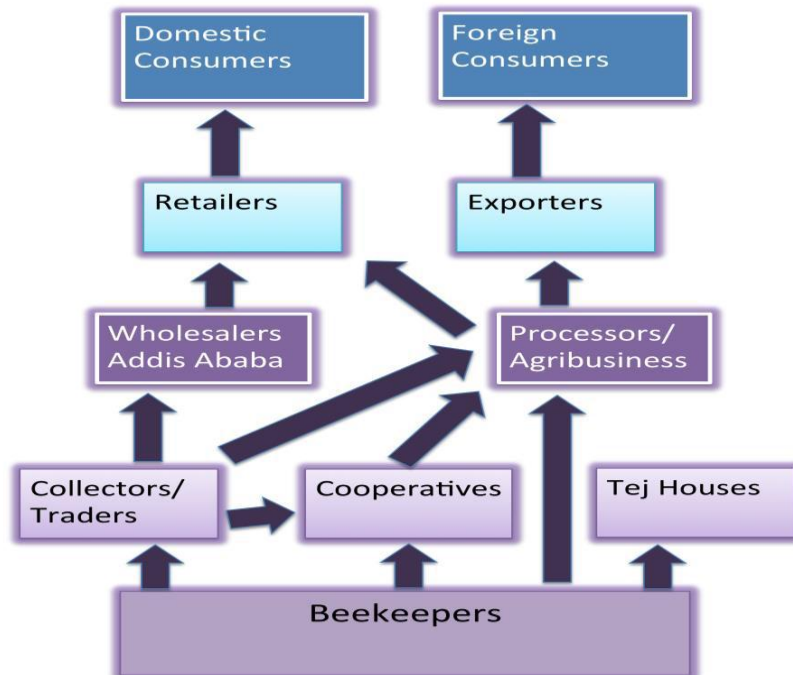


Figure 2: Honey value chain in Ethiopia.

Source: Mikhailet, et al., (2012)

## 2.9. Methodological Framework

According to (Webber and Labaste 2009), the value chain analysis methodology focuses on three key issues: The dynamics of information in the value chain from final consumption through to primary production and input suppliers, the creation and flow of value at each stage in the eyes of the final consumer, and the nature of relationships among the actors. Val-

ue chain analyses is model integrates analysis of commodity supply chain and associated enabling environment with entry point of product and process flow, information and money flow, and the enabling environment.

The value chain approaches apply six tools and steps. The analysis starts with prioritizing a commodity for value chain development and then mapping of the value chain; analysis of the value chain performance in terms of costs, prices and margins; analysis of technology, knowledge, and upgrading possibilities through assessment of gaps in technology and knowledge and existing or future opportunities value. Chain governance, which is used to identify stakeholders influencing governance, rules and regulations and their enforcement and finally linkages and relationships among the stakeholder is, analyzed (Berg *et al.*, 2006).

A value chain map can serve as a way of identifying and categorizing key market players. Value chain maps may help to invite market players to various workshops and trainings to improve the efficiency of the chain and quality of the product. Value chain maps can also illustrate which other supporting organizations (government, NGOs and associations) are available, and which value chain levels they concentrate their services on (Biruk, 2015).

However value chain analyses have provided a number of important insights, it has a number of limitation. Value chain analysis too often focuses simply on improvements within the given value chain, rather than on how value chains can be shifted to target different, more attractive markets and business strategies and also it lacks the ability to analyze specific, chain-level upgrading strategies and assessment of their impacts. More specifically, objective assessment and ranking of impacts of upgrading strategies and optimal entry points for intervention are lacking (Webber and Labaste, 2009).

## **2.10. Review of Empirical Studies**

### **2.10.1. Value chain approach**

Major constraints, which are currently hindering the development of the honey value chain, can be categorized according to the three basic stages: the farm level, the marketing/traders stage, and consumer stage.

Value chain study conducted on honey by Ayantu (2018). At farm-level, key constraints faced by beekeepers are the shortage of improved beekeeping equipment and lack of improved honey production skill, absconding of bee colony, seasonal shortage of forage, diseases and pest, lack of formal honey market, inadequate credit service, lack of market information, death of colony and lack of honey producer cooperative in the district.

Concerning inputs supply, about 26.6% and 14.39% of sampled farmers reported problem of shortage of improved beekeeping equipment and seasonal shortage of forage, respectively. With regard to production, 19.4%, 5.8%, 7.9% and 3.6 of sampled producers faced lack of modern beekeeping skill, bee colony absconding, diseases, pest, and death of colony, respectively.

value chain analysis of honey by Kassa ( 2018) ,indicated that the major constraints to exploit the untapped potential of beekeeping activity in the study area are knowledge and skill on beekeeping linkage, lack of organized marketing channel, improved beekeeping equipment and agrochemical bee poisoning despite the constraints, In the study area there is favorable bee forage and new developed marketing opportunity like honey processing industries and honey unions, focus of government and non organizations to the sub-sector than ever before .This will give Kaffa and Sheka zones farmers the opportunity to access improved technologies and capacity building (training on apiculture) .

Study conducted by Bezabih ( 2008 ), Horticulture value chain ,in Eastern parts of Ethiopia identified different problems on the chain .The major constraints of marketing identified by the same study include lack of markets to absorb the production, low price for the products, large number of middlemen in the marketing system, lack of marketing institutions safeguarding farmers interest and rights over their marketable produces (e.g. cooperatives)lack of coordination among producers to increase their bargaining power, poor product handling and

packaging imperfect pricing system and lack of transparency in market information communications .

### **2.10.2. Factors affecting marketed supply**

The market supply refers to the amount actually taken to the markets irrespective of the needs for home consumption and other requirements. Whereas, the marketed surplus is the residual with the producer after meeting the requirement of seed, payment in kind, and consumption by farmer (Wolday, 1994).

Study by Wolelaw (2005) found out the major factors that affect the marketable supply of rice at Fogera district using multiple linear regression model. He investigated the relationship between the determinant factors of supply and the marketable supply of rice and his study revealed that the current price, lagged price, amount of rice production at farm level and consumption at household level had influenced marketable supply of rice at the district.

Getachew (2009) has noted that the transition of the small-scale sector towards commercial production will ultimately be determined by the ability and willingness of producers to provide a commodity. Similarly, Mamo (2009) argued that the development of markets, trade, and the subsequent market supply that characterize commercialization are fundamental to economic growth.

Melaku *et al.* (2008) conducted a study on approaches, methods, and process for innovative apiculture development in Ada'a Liben district and found that knowledge and beekeeping experience, marketing information, established marketing system and institutional linkage are significant factors that affect amount of honey production and amount of honey supplied to the market positively. As the study reported, better knowledge and skill on beekeeping, access to marketing information and well-established institutional linkage increases the production as well as marketable surplus on honey.

Assefa (2009) used robust OLS Regression analysis to identify factors affecting marketable supply of honey in Atsbi Wemberta district and found that education level of the household, size of quantity of honey output and one-year lag market price of honey were the significant determinant factors of the quantity of honey supplied positively. About 43.4%, 34.8%, consumers purchased 14.4% and 7.4% of the total honey marketed directly from producers, honey collectors, retailers, and processors, respectively in 2009.

Honey market supply analysis revealed that beekeeping experience, income from farm and off farm activities, access to different Services like apiary visit, beekeeping training, and improved beekeeping inputs supply are directly related to the amount of marketed surplus of honey. From this, there is a need to get income, experience, and services, which stimulate beekeepers in order to promote quality and quantity of honey production and marketed surplus (Getachew, 2009).

Marketable supply of red pepper indicate that experience of the household head, average lagged price of red pepper, education level of the household head, Proportion of land allocated for red pepper production positively and. average input price of red pepper in the study year and disease negatively significantly determining the marketable supply of red pepper (Mekdes *et al.*,2018) .

Multiple linear regression model kasaa *et al.*,(2017) ,Factors affecting market supply of honey in Chena district, Kaffa zone, Southern Ethiopia result reveals that beekeeping experience, hive types used, number of beehives owned, number of extension contact and cooperative membership positively and significantly affected honey market supply while distance from nearest market significantly and negatively affected it.

The result of multiple linear regression models in Samuel (2014). on analysis of Honey market chain the case of Sodo Zuria indicate that age of the household head and family size of the household head negatively, beekeeping training, number of modern bee hive used, educational status of the household head, price, total livestock holding and agro ecology positively were related with volume of honey supplied to market.

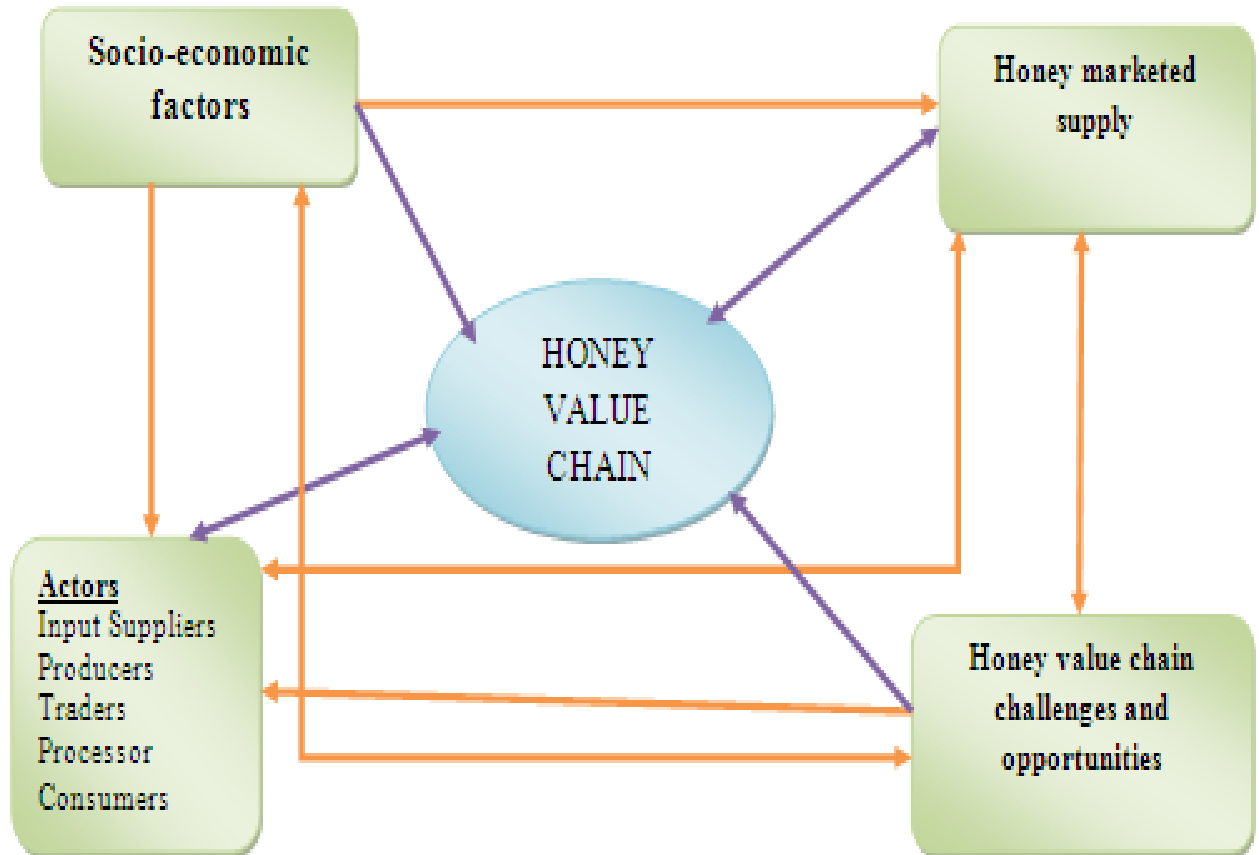
Ayantu (2018) used multiple linear regression models, on honey value Chain analysis in Gera District of Jimma Zone Oromia National Regional State. *Ethiopia*. Indicate that quantity of honey produced, type of beehive used, beekeeping experience, frequency of extension contact, sex of the house hold head positively and family size and distance to nearest market negatively and significantly determining the quantity of honey supplied to the market.

## **2.11. Conceptual Framework**

The conceptual framework of value chain analysis is highly relevant to agricultural value chains because agricultural value chains are critically dependant on environmental resources. In addition, the agricultural sector is often characterized by the prevalence of traditional social



norms. In Porter (1985) framework, the value chain provides a tool that firms can use to determine their source (current or potential) of competitive advantage. In particular, Porter argued that the sources of competitive advantage could not be detected by looking at the firm as a whole. Rather, the firm should be separated into a series of activities and competitive advantage found in one (or more) of such activities. Porter distinguishes between primary activities, which directly contribute to add value to the production of the product or services and support activities, which have an indirect effect on the final value of the product. In the framework of Porter, the concept of value chain does not coincide with the idea of physical transformation. Porter introduced the idea that a firm's competitiveness does not relate exclusively to the production process. Enterprise competitiveness can be analyzed by looking at the value chain, which includes product design, input procurement, logistics, outbound logistics, marketing, sales, and after-sale and support services such as strategic planning, human resources management, and research activities. The model created by Porter identifies a number of primary and support activities that are common to a range of businesses. The value chain highlights specific activities through which firms can create value and therefore is a useful tool to simplify analysis. A value chain consists of all stages of a technical production process as well as of the interaction between these stages. The production process starts at the stage of input supply, than covers production, processing and marketing and ends with the consumption of a certain product. It can be seen as the hard skill of a value chain. The second part of a value chain, the interactions between the single stages, is the relationships and contractual linkages that not only determine the way the goods are traded between the different stages but are decisive for the overall character of the chain. The linkages between the stages lead to the so-called governance structure of a chain that can be seen as the soft skill of its (Schipmann, 2006). The conceptual framework of honey value chain views as a network of horizontal and vertically integrated value chain actors that are jointly aimed toward providing products to a market. The value chain includes direct actors who are commercially involved in the chain (input suppliers, producers, traders, processor, and consumers) and indirect actors who provide services or support the functioning of value chain. These include financial or non-financial service providers such as bankers and credit agencies, business service providers, public research, transportation, extension agents, and NGOs.



**Figure 3 : Conceptual framework of the study**  
 Source: Own sketching 2017

### 3. METHODOLOGY

#### 3.1. Description of the Study Area

Gomma is one of the districts in the Oromia Region of Ethiopia. It is one of the 20 districts in Jimma Zone. It is located 403 km southwest of Addis Ababa and about 50 km west of Jimma town. It is named after the former Kingdom of Gomma, whose territory was roughly the same as the modern district. Part of the Jimma Zone, Gomma is bordered on the south by Seka Chekorsa, on the southwest by Gera, on the northwest by Setema, on the north by the Didessa River which separates it from the Illubabor Zone, on the northeast by Limmu Kosa, and on the east by Mana. Towns include Beshasha, Choche, Ghembe, and Limmu Shaye.

The altitude of this district ranges from 1,380 to 1,680 meters above sea level; however, some points along the southern and western boundaries have altitudes ranging from 2229 to 2870 meters. A survey of the land in this district shows that 60.7% is arable or cultivable (52.7% was under annual crops), 8.1% pasture, 4.6% forest, and the remaining 20.1% is considered swampy, mountainous or otherwise unusable. Land in cultivation included the two state coffee farms. Fruits, avocados, and spices are important cash crops.

Coffee is also an important cash crop in Gomma; over 50 square kilometers are planted with this crop. Coffee is grown in this district under shade trees; while the dominant species are *Albizia gummifera*, which can shade as many as 150 coffee trees, and *Millettia ferruginea*, other species are also used as shade trees. (DOoARD, 2017).

Industry in the woreda includes 118-grain mills, 35 coffee hulling and 33 coffee pulping mills, one sawmill, an office and furniture factory, and one edible oil mill. There were 45 Farmers Associations with 45,226 members and 21 Farmers Service Cooperatives with 43,088 members. One micro-finance institution operates in this woreda: the Oromiyaa Credit and Saving SC (OCS), established in 1997; its branch in Gomma was one of the first the OCSSCO opened. While mismanagement forced the OCSSCO to close that branch within the year, it was reopened in 2001 and serves customers in Agaro and 17 of the 39 kebeles. Gomma has 55 kilometers of dry-weather and 89 all-weather road, for an average of road density

of 117 kilometers per 1,000 square kilometers. About 41% of the urban and 15.9% of the rural population has access to drinking water.(DOoTM ,2017).

The district has an estimated total population of 350,882, of whom 172,888 are men and 177,994 are women; 71,018 or 20.24% of its population are urban dwellers, which is greater than the Zone average of 12.3%. With an estimated area of 1,230.16 square kilometers, Gomma has an estimated population density of 285.2 people per square kilometer, which is greater than the Zone average of 150.6. (CSA, 2017).

The five largest ethnic groups reported in Gomma were the Oromo(79.11%), the Amhara (7.28%), the Kullo (4.2%), the Silt'e (2.6%), and the Kafficho (2.04%); all other ethnic groups made up 4.77% of the population .Oromiffa was spoken as a first language by 78.78%, 14.22% spoke Amharic, 2.43% Kullo, 1.14% Silt'e, and 1.12% spoke Kafa; the remaining 2.31% spoke all other primary languages reported. The majority of the inhabitants were Muslim, with 80.15% of the population having reported they practiced that belief, while 19.03% of the population said they professed Ethiopian Orthodox Christianity.

The district is known for predominantly growing coffee. It is located 403 km southwest of Addis Ababa and about 50 km west of Jimma town. It is also the center for coffee biodiversity centers in Ethiopia is found in this district (DOoARD, 2016).There is 39 kebeles and 3 urban administrations.

Gomma is the second most densely populated district in Jimma Zone with a size of 96,361.72 ha (94.4 km<sup>2</sup>) including the two coffee state farms which cover an area of 2704 ha (CSA, 2017).

The average annual rainfall of the district is 1524 mm with low variability. It is bimodality distributed in which the small rains are from March to April and the main rainy season from June to October. Hence, crop and livestock production is not constrained by the amount and distribution of rainfall. Altitude in Gomma ranges from 1387 to 2870 meters above sea level (m.a.s.l). Most parts of the district lies between 1387 and 1643; and 1849 and 2067 m.a.s.l.

However, few of the areas in the district have altitudes ranging from 2229 to 2870 m.a.s.l. Nitrosols is the most abundant covering about 90% of the district. These soils are young soils and are generally acidic soils. However, farmers grow crops that are acid tolerant. The pH of the soils in Gomma ranges between 4.5 and 5.5. However, the commonly observed problem relat-



### **3.2. Types, Sources, and Methods of Data Collection**

For this study, both quantitative and qualitative data were used. The study used these and other data to estimate the determinants of honey supplied to the market. For the purpose of value chain, analysis information on volume of honey mobilized (sold/bought), cost and price, actor's linkage, value-adding activities, were collected, and used. Data source for this study was both primary and secondary data. Primary data were collected using formal survey.

**Primary data:** Primary sources were collected from smallholder farmers randomly selected from rural *kebeles*, traders, and consumers at different levels in the district. To collect primary data, a semi-structured questionnaire was prepared and used. Before data collection, the questionnaire was pre-tested on seven farmers and four traders to evaluate the appropriateness of the design, clarity, and interpretation of the questions, relevance of the questions and time taken for an interview. Hence, appropriate modifications and corrections were made on the questionnaire. Enumerators collected the required data from the producer farmers using a pre-tested interview schedule.

**Secondary data:** It was collected by reviewing documents of secondary sources namely, district office of livestock and fishery resource development, office of district trade and market, cooperative promotion office, published and unpublished document.

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

#### **3.3.1. Producers sampling**

In the first stage, Six Sample *kebeles* were select out of the 36 honey producing *kebeles* in the district based on their actual production and market supply of honey and their proximity to the local market. In the second stage, sample households were selected randomly with probability proportional to size from sample *kebeles*. Gomma district was selected purposively because of accessibility compared to other district. For this study, 119 beekeepers were sampled and interviewed from the district for the total sample population size (honey producer farmers) is 3552.

Sample size for this study was determined using appropriate sample size determination technique using the total population of the sample *kebeles*. The determination of sample **size** resolved by using Yamane (1967), simplified formula to calculate the sample size with the desired confidence level of 95%.

$$n = \frac{N}{1 + N(e)^2} \quad (1)$$

Where:

n= the required sample size

N = is the population size (total number of rural farmers [3552] in six selected *Kebeles*)

e = margin of errors at 9% (the desired level of precision, e= 0.09)

$$n = \frac{3552}{1 + 3552(0.09)^2} = (119) = \text{the required sample size}$$

Table 2: Number of population and sample from each sample *kebeles*

Sr. No	Kebele (n=6)	No of households	No of honey producers	No of sample producer
1	Teso Sadacha	1471	677	23
2	Bulbulo	959	455	15
3	O/Baqo	2095	783	26
4	Choche lemi	1491	748	25
5	O/ Gurude	1374	523	18
6	Bulado	845	366	12
	Total	8235	3552	119

Source: Gomma district trade and development affaire and cooperative promotion agency

### 3.3.2. Sample size determination for actors other than producers

According to the data, taken from Gomma district trade and market office and cooperative promotion agency, there are 18 local collectors, 13 retailers, 12 Whole seller ,21 Processor/taje makers, 1 union multipurpose (keta muduga) and 10 primary cooperative existed. They were selected all of them and 21 consumers.

Table 3: Distribution of sample trader

Type	No of Trader	No of sample trader
1 Local collector	18	18
2 Retailers	13	13
3 Processors	21	21
4 Whole Sellers	12	12
5 Cooperatives	10	10
6 Union	1	1
7 Consumers		21
Total		96

Source: District trade & market office

### 3.4. Method of Data Analysis

#### 3.4.1. Descriptive analysis

Descriptive statistics such as percentages, frequencies, mean, and standard deviation were used to analyze the characteristics of the sampled honey producer households. While for analysis of the factors influencing honey market supply, multiple linear regressions was used.

#### Value chain mapping

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 (UNIDO, 2009). The study used value chain analysis, which is very effective in tracing product flows, showing the value adding stages, identifying key actors and the relationships with other actors in the chain.

Mapping the value chain is to understand the characteristics of the chain actors and relationships among them, including the study of all actors in the chain; the flow of goods through the chain; of employment features; and of the destination and volumes of domestic and foreign



sales. This information can be obtained by conducting surveys, interviews, and participatory workshops as well as by collecting secondary data from various sources.

#### Marketing margin

Marketing margin and their cost components are the best tools to analyze performance of market. Knowledge of marketing costs and margins in a chain will enable us to identify how revenues and margins are distributed over the actors in the value chain in order to conclude whether they can increase margins in a value chain. Marketing margin will be calculated taking the difference between producers and retail prices. Calculating the total marketing margin will be done by the following formula:

$$TGMM = \left( \frac{\text{End buyer price} - \text{First seller price}}{\text{End buyer price}} \right) \times 100 \quad (2)$$

Where:

TGMM-Total gross marketing margin

Producer's participation (GMM), which is the portion of the price paid by the end consumer that belongs to the farmer as a producer. The producer's margin or share in the consumer price (GMMp) is calculated as-

$$GMMp = \left( \frac{\text{End buyer price} - \text{Marketing gross margin}}{\text{End buyer price}} \right) \times 100 \quad \text{or} \quad (3)$$

Where: GMMp- Producers' participation (farmer's portion)

The consumer price share/portion of market intermediaries is calculated as

$$MM = \left( \frac{Sp - BP}{FCP} \right) \times 100 \quad (4)$$

Where:

MM = Marketing margin (%)

SP = Selling price at each level

BP = Buying price

FCP = Final consumer price

#### 3.4.2. Econometric analysis

This method of data analysis refers to the use of different economic and statistical tools or models for testing hypothesis related to the objective of the study.

### ***3.4 .2.1: Econometric model specification***

Following Green (2003), the multiple linear regression model is specified as  $Y_i = F(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11})$

Where  $Y_i$  = quantity of honey supplied to market

$X_1$  = Sex of HHH

$X_2$  = Family size

$X_3$  = Education level of HHH

$X_4$  = Distance to nearest honey market

$X_5$  = Credit access

$X_6$  = Extension access or frequency of extension contact

$X_7$  = Number of beehives

$X_8$  = annually income excluding income from beekeeping

$X_9$  = Experience of the HHH

$X_{10}$  = Type of beehive used

$X_{11}$  = Cooperative membership

$X_{12}$  = Information access

Econometric model specification of supply function in matrix notation is the following.

$$Y = \beta X + U_i \quad (5)$$

Where:  $Y_i$  = honey supplied to the market

$\beta$  = a vector of estimated coefficient of the explanatory variables

$X$  = a vector of explanatory variables

$U_i$  = disturbance term

### 3.4.2.2. Specification of errors

Before taking the selected variable into the model, it was imperative to check whether different econometric model assumptions do hold. It was imperative to check for the existence of multicollinearity among the continuous variables and verified the degree of association among discrete variables. Variance Inflation Factors (VIF) technique was employed to detect the problem of multicollinearity among continuous variables. Large VIF are indicators of multicollinearity and those explanatory variables with  $VIF > 10$  were excluded from the regression analysis (Maddala, 1988)

$$VIF(X_i) = (1 - R_i^2)^{-1}$$

Where, is the coefficient of multiple determinations when the variable is regressed on other explanatory variables?

Similarly, there might also be an interaction between two qualitative variables, which can lead to the problem of high association. To detect the problem, the contingency coefficients were computed from the survey data, and contingency coefficient greater than 0.75 is an indication of existence of multicollinearity among qualitative variables.

$$CC = \sqrt{\frac{\chi^2}{N + \chi^2}} \quad (7)$$

Where, CC is contingency coefficient,  $\chi^2$  is chi-square and N is total sample size.

## 3.5. Definitions of Variables and Hypothesis

### 3.5.1. Dependent variables

Volume of honey supplied to market (vhm)

It is continuous dependant variable. It is measured in kilogram and represents the actual honey supplied to market by farm households in a (year, 2017), which is selected, for regression analysis and it takes of positive value.

### 3.5.2. Independent variables

The explanatory variables expected to influence the dependent variables were following:

**Sex of the household head (SHH):** This is dummy variable,(took value of 1, if the household head is male and 0 otherwise) .

Study conducted by Betselot (2012), on honey value chain in the case of Ada'a district reveals that, Sex of the household head was positively related to honey supplied to market.

Therefore, Sex of the household head was hypothesized to be positively related to honey supplied to market. Ayantu (2018), honey value chain analysis in Gera district Sex of the household head was found to be positively related to honey supply to market.

**Family size ( FSZ ):** This variable is a continuous explanatory variable and refers to the total number of family in the household.

The study conducted by Samuel (2014), on market chain analysis of honey in Sodo Zuria district, Southern Ethiopia. Indicated that households with more number of family members were assumed to supply less amount of honey to market than those households with relatively less number of family members because of the increase in consumption family size affected supply of honey to market negatively and significantly.

Hence, this study attempted to generate information or evidence to all volunteer stakeholders who are willing to involve in production and marketing of honey. Therefore, it was hypothesized to be negatively related to honey supplied to market.

**Education level of the household head( EDLH ) :** This is a continuous variable, which is measured in educational grade level of the household head and hypothesized to increase quantity of honey supplied to market This is because a farmer with good knowledge can adopt better practices that could increase both yield and market supply. Samuel (2014) on market chain analysis of honey in Sodo Zuria district, Southern Ethiopia, support that education has significant and positive effect on market supply of agricultural products.

**Distance to nearest market (DNM):** It is a continuous variable measured in kilometers from the household residence to the market center. As stated in Ayantu (2018), honey value chain analysis in Gera district, Efa *et al.*, (2016), Biruk (2015) value chain analysis of bee honey and credit market participation of bee keepers: the case of damot Gale district, southern Ethiopia.

Distance from the nearest market increased the quantity of honey supplied to market decreased. Because of distance from the market increases, transportation cost also increase to

transport honey, which in turn may decrease the marketed surplus. The longer distance of the market, the higher would be the transportation charges, increased walking kilometer, and increased other marketing costs. Therefore, in this study distance to the nearest market hypothesized to be negatively related to honey supplied to market.

**Credit received:** This is a dummy variable, (took value of 1, if the household received credit and 0 otherwise). Credit received would enhance the financial capacity of the farmer to purchase the beehives and accessories. A study conducted by Betselot (2012) on honey value chain in the case of Ada'a reveals that credit access for honey production was positively related to honey supplied to market. Lack of credit access leads to insignificant volumes of honey being available for sale. Therefore, in this study, credit access for honey production was hypothesized to be positively related to honey supplied to market.

**Frequency of extension contact for honey production (EXTCON):** This is continuous variable, which is the number of days, that farmer has contact with extension agent for honey production work supervision in a year. kassa *et al.*, (2017) Factors affecting market supply of honey in Chena district, Samuel (2014) market chain analysis of honey in Sodo Zuria district, Southern Ethiopia, Getachaw (2009) Honey market chain analysis: The case of Burie district, West Gojjam zone, Amhara national regional state. Betselot (2012), conducted a research on market chain analysis of honey in Sodo Zuria district. Indicated that beekeepers that get more knowledge during training concern beekeeping system particularly about modern honey production, harvesting, storing and handling methods increasing honey market supply.

**Number of beehives owned (NBHO):** It is continuous variable measured in terms of total number of traditional, and modern beehives owned. These variables are hypothesizing to influence amount of honey sales to market positively. kassa *et al.*, (2017) Factors affecting market supply of honey in Chena district, Kerealem *et al.*, (2009). Constraints and Prospects for Apiculture Research and Development in Amhara region, Andassa Livestock Research Center, Bahir Dar, Ethiopia. Getachew (2009) Honey market chain analysis: The case of Burie district, West Gojjam zone, Amhara national regional state.

**Annual income excluding income from beekeeping in ETB (INCOME):** It is a continuous variable measured in Ethiopian Birr (ETB) The variable represents income originating from

different sources other than beekeeping obtained by household head and other household members in a year. According to Getachew (2009) Honey market chain analysis: The case of Burie district, West Gojjam zone, Amhara national regional state., income from farm and off farm activities, are directly related to the amount of honey supplied to market. Income from non-beekeeping source is hypothesized to affect honey supplied to market positively.

**Beekeeping experience in number of year (BKEXP )** :-It is a continuous variable, measured in the number of years that the household head spend in beekeeping business .The farmer with more experience may supply more honey product to the market. A study conducted by kassa *et al.*, (2017), Factors affecting market supply related positively and Betselot (2012) on honey value chain reveals that household's beekeeping experience for honey production was negatively related to honey supplied to market. The more beekeeping experience could be associated with older farmers who are less inclined to be engaged in honey business and their risk averts behavior which results in less flexible in adopting new technologies and thereby boosts production for marketable surplus. For this study, it was hypothesized positively to affect honey supplied to market positively.

**Type of beehive used (TBH)**:-This variable is categorical variable indicating the 0= if farmers used traditional 1= if farmers used both and 2=improved beehive type that the household owned. Modern beehive is more productive in honey production. However, due to financial, knowledge and other problems farmers may prefer the traditional beehive. A study conducted by kasaa *et al.*,(2017) Factors affecting market supply, Betselot (2012) and Ayantu (2018) on honey value chain reveals that ownership of modern beehive was positively associated with increased probability of household's participation in honey market. In addition, Farmers possessing modern beehives produce better volume than those who use the traditional one and the more they produce, the more they tend to supply to the market. Therefore, this variable is hypothesized to take positive sign on honey supplied to market.

**Cooperative membership (COOPM)**: It is a dummy variable with a value of 1 if a household head had member to cooperative and 0 otherwise. Study by kasaa *et al.*, (2017).Study by Shewaye (2015) also confirmed that being membership of cooperative could have better access to market information, inputs, technical advice and access to credit facilities which grid

towards increments of output that in turn increase volume of supply to market. Therefore, this variable is hypothesized to take positive sign on honey supplied to market.

**Access to Marketing information:** This is a dummy variable with a value of 1 if a household head has accessed to the current and updated market information and 0 otherwise. Access to information, provided through mass media, from extension agents, or mobile phone reduces risk perceptions of farmers (Siziba *et al.*, 2011). Therefore, it is hypothesized that access to current and updated market information is positively related to honey supplied to market.

### **3.6. Challenges and Opportunities of Honey Value Chain**

SWOT analysis (alternatively SWOT matrix) is an acronym for strengths, weaknesses, opportunities, and threats and is a structured planning method that evaluates those four elements of a project or business venture. A SWOT analyses can be carried out for a product, place, industry, or person (Albert Humphrey, 2012).

At each stage of honey market to identify strengths (S), weaknesses (W), opportunities (O), and threats (T) of honey producer, local collector, whole seller and retailer and union in the study area. Opportunities for future development of honey market have been also explored through investigation of existing and potential markets.

Table 4: Summary of hypothesized variables that determine the volume of honey supplied

Variable	Description	Variable Type	Expected Sign
Dependent Variable			
VHM	Volume of honey supplied in Kg	Continuous	
Independent Variables			
SHH	Sex of the household head	Dummy=Male,0=Female	+
FSz	Family size in number of individuals Family size	Continuous	-
EDLH	Education level of the household head in number of class attended	Continuous	+
DNM	Distance to nearest market in Km	Continuous	-
CRED	Credit received	dummy	+
EXTCON	Frequency of extension contact per year	Continuous	+
NBHO	Number of beehives owned in number	Continuous	+
INCOME	Annually income excluding income from beekeeping in ETB	Continuous	+
BKEXP	Beekeeping experience in number of year	Continuous	+
TBH	Type of beehive used	Catagorical,0=Traditional 1=Both 2=Improved	+
COOPM	Cooperative membership	Dummy=Yes 0=No	+
ACMI	Access to market information	Dummy ,1=Yes0=No	+



## **4. RESULTS AND DISCUSSION**

This section deals with the major outcomes of the study. It is divided into five main sections. The first section deals with descriptive statistics of the sample households. The second section presents value chain analysis of honey, which includes actors and their roles, value chain map, value chain governance, honey production cost, and marketing costs of honey along the chain. The third section presents marketing channel and performance analysis of the value chain actors, which comprises of marketing channels, marketing costs, and margins, benefit shares of actors, and share of value addition in honey value chain. The fourth section presents results of econometric analyses, which contain factors affecting market supply of honey by using multiple linear regression models.

### **4.1. Demographic Socio-economic Characteristics of the Sampled Honey Producers**

Concerning sex of the household head, out of the total sampled households in the study area, 94.1 percent were male while the remaining 5.9 percent were female-headed households. Concerning the marital status most of the household heads 95.8 percent were married, 2.5 percent were divorced while the remaining 1.7 were widowed/err (Table 5).

Concerning the religion of the household head, out of the total sampled households in the study area, 2.5 percent were protestant, 35.5 percent were orthodox while the remaining 62 percent were Muslim households.

Concerning membership to cooperatives 63.9 percent was membership to cooperative and the rest 36.1 was non-members (Table 5).

Table 5: Demographic characteristics (dummy and categorical variable)

Dummy Variable	Responses	Frequency	Percentage
Sex	Female	7	5.9
	Male	112	94.1
Religion	protestant	3	2.5
	Orthodox	42	35.3
	Muslim	74	62
Marital status	Married	114	95.8
	Divorced	3	2.5
	Widowed/er	2	1.7
Cooperative member ship	No	43	36.1
	Yes	76	63.9

Source: Own computation survey, 2017

The overall mean age of the respondents was 44.26 years with standard deviation of 7.3. As (Table 5) indicated that, the average family size of the sampled respondents was 5.86 persons with standard deviation of 1.99. Educational level of the household head can influence how he or she views the new technologies and new ways of doing business. It can affect technology adoption decision. Concerning their literacy level, the mean educational level of sample respondents was grade 2.71 with the standard deviation of 2.19. This implies that majority of the beekeeping households are literate though they are with low educational level.

Land holding of the sample respondents ranges from 0.5 ha to 2.5 ha with a mean of 1.96 ha per household in district (Table 5)

Generally, the average land holding in the district showed significant difference with that of national average household land holding of 1.0 to 1.5 ha (ASE AIFSP, 2002) and slightly differ with that of kinati et al., 1.73 ha (2009).

Table 6: Demographic and socio-economic character (continuous variables)

Continues Variable	Mean	Std. Dev.
Age	44.26	7.30
Household size	5.86	1.99
Education level	2.71	2.19
Size of land holding	1.96	1.61
Distance to nearest honey market	10.16	3.69
Quantity supplied to market (kg)	223.09	98.29
Tropical livestock unit (TLU)	2.69	5.28
Experience in beekeeping	10.99	2.99
Number of bee hives	23	9.24
Quantity of honey produced (kg)	244.49	107.96

Source: Survey result 207

Distance from produce's house to nearest market was also the factor, which was expected to determine producer's honey supply to market. As observed from Table 6, the average distance needed for producer is to travel to nearest market place was 10.16 kilometer with standard deviation of 3.69.

The average amount of honey marketed per household was 223.09 kg and the standard deviation was 98.29.

Total number of livestock holding of the households measured in Tropical Livestock Unit (TLU). Livestock are farmer's important sources of income, crop cultivation, and transportation of produces. As indicated in Table 6, average livestock holding was 2.69 TLU and the standard deviation was 5.28.

The survey result in Table 6 showed that people in the most productive age are actively engaged in beekeeping activities with an average experience of 10.99 years. With regard to the respondents' number of beehive possession (traditional and/or improved), the average holding was about 23 hives per household.

#### 4.2 Access to service

Out of the total respondents of honey producing sample households, about 85.7 % have contacted extension services providers. Only 14.3 % of the farmers reported that they had no access to extension service regarding honey production. The extension services providers were office of livestock and Fish resource development experts, As, NGO and innovative farmers.

The extension services provided were about honey production, input use, harvesting and post-harvest handling.

Table 7: Access to service of sample household

Variables	Item	Frequency	Percentage
Access Market information	No	37	31.1
	Yes	82	68.9
Access to credit	No	47	36
	Yes	53	44
Extension contact/year	No Extension contact	17	14.3
	Once in a month	22	18.7
	Twice in a month	35	29.41
	Four times in a month	45	37.59

Source: Survey result 2017

From the survey, result access to market information shows that there is no system in place for systematically collecting, analyzing, and disseminating information relevant to the needs of different actors. However, about 68.9 % of sampled farmers had access to market information from different sources and 31.1 % had no access to market information.

Finance is the crucial element starting from purchase of input up to the marketing of the product. The survey result showed that 44.% of the sample households reported as they have credit access for honey production and the mean credit received was 3328.57 ETB from formal and informal sources (OCSSCO, friends, relatives or village moneylenders). Even if credit services enhance the productivity of farmers, there is lack of attention to access and availability of credit from formal institution it was observed that farms were not willing borrowing money from institutions, which have asking interest because of religion aspect in the study area. The main objectives of the credit were to purchase honey production input. The survey result indicates that majority (61.3%) of the respondents were members of beekeepers' cooperatives while the rest (38.7%) of them were not members. Finally, the average distance needed for sampled honey producer is to reach to nearest market place supplies honey was 10.16 km.

#### 4.3. Household Cash Income and its Source

Sample households depend on different means of livelihood earning strategies where the major sources of income for the majority of the producers in Gomma District. The survey result

indicated that following to coffee production respondent support the livelihood, crop production, and fruit production, animal production(honey production), off farm activities, remittance and trading. The average income of sample household from coffee and other was 42,325 birr and average income from honey was 16103 birr.

Table 8 : Sources of cash income by farmers (Birr/HH)

Income source	Mean	SD	Minimum	Maximum
Income from coffee and other	42,325.35	3,6345.5	13,200	67,420
Income from Honey	16,103 .00	14,469.91	3,300	37,900
Total income	58,428.35	58845.41	16,500	105,320
Credit received in birr	3,736	3,176	7000	7800

Source: Survey result 2017

#### 4.4. Input and Production of Honey

The respondents mentioned a wide range of accessories. In the study, area inputs used in the process of honey production includes bee colony, beehive, supplementary feed, sanitation materials (like ash and burn oil), honey container, and protective wears.

It was learnt during the survey that, apart from the known basic hive tools many of the materials are either non-existent or kept by quite few numbers of respondents particularly, the honey extractor was reserved at the center of the *kebele* for demonstration purpose. Because its potential was low as compared with amount of honey produced in each *kebele*.

Honey is harvested in the study area from October to December and May (peak periods) and sometimes to March in each year .The majority of respondents 51.13% harvested honey once within this period of the year. Whereas 42.25 % of the sample farmers harvested twice in a year and 6.62 % of the sample farmers respond that harvest three times in the same period, which indicates the presence of high potentiality of the area. It was reported that any production obtained in the remaining periods of the year would be left as food for the colony to strengthen it for the next harvest . This research result was similar with Tessega Belie (2009) in Burie district and Kinati *et al.*, (2009) Assessment of Honey Production and Marketing System in Gomma district, South Western Ethiopia. Where honey was harvested once or twice, and in some cases even three times.

Table 9: Frequency of harvest and number of beehives

Frequency of harvest	Type of bee hives	
	Traditional beehive %	Improved beehive %
1	62.88	39.39
2	32.98	51.51
3	4.14	9.10

Source: Survey result, 2017

Table 9 indicated that among those who use traditional beehive, 62.88 % of them harvest honey once in a year, 32.98 % harvest twice per year and 4.14 % harvest three times in a year. In addition, 39.39 %, 51.51% and 9.10% who use improved beehives harvest once, two and three times in a year respectively.

It was investigated that from the survey that harvesting of honey once and twice a year is a common practice in the study area (Table 9). It was also reported that while harvesting of honey farmers leave some part of it in the beehive and any production obtained in the non-pick periods of the year would be left as supplementary food for the colony to strengthen it for the next harvest.

Table 10: Volume of honey production per beehive

Type of beehives	Mean(kg/hive)	Standard Deviation	Minimum	maximum
Traditional	7.32	2.9	6.29	8.05
Modern	23.38	5.2	21.67	24.41

Source: survey result 2017

Honey yield was markedly different for the traditional and modern hives. On average, it was about 7.32 kg/hive and 23.38 kg/hive from the traditional and modern hives, respectively (Table 10). As compared to the national average yield of honey per hive (kg/hive), 7.3, and 25.2 for traditional and modern beehives, respectively (CSA, 2017), the District has good potential of honey production.

#### 4.5. Demographic and Socio-Economic Characteristics of all Sampled Traders

The survey indicates that 90% of the sample traders were males while 10 % of them were females. This implies that women's participation in honey trading was low. The proportion of trader that were illiterate was 12.9%, those who were can read and write, primary; junior and secondary educational levels were 42.8%, 4.9 %, 12.9% and 6.4 % respectively. This implies that most of honey traders in the District are literate.

Table 11: Demographic characteristics of sample trader

Variable	Item	Actors			
		Local collectors	col- Retailers	Processors	Wholesalers
		Percent			
Sex	Female	61.9	30.8	33.3	58.3
	Male	38.1	69.2	66.7	41.7
Marital status	Married	61.1	61.5	85.7	58.3
	Divorced	22.2	23.1	14.3	33.3
	Widowed/er	16.7	15.4		8.4
Religion	Protestant	-	15.4		
	Orthodox	27.8	30.8	100	33.3
	Muslim	72.2	46.2		66.7
	Others		7.6		
		Mean			
Age		36.8	45.38	45	37.25
Family size		6	7.15	5.8	6.66
Education		5.88	6.69	11.9	5.66
Experience		10	13.23	12.8	9.58

Source: survey result 1017

The mean age of the trader was 36.8, 45.38, 45, and 37.25. For local collectors, retailers, processors, wholesalers respectively. The average family size of the sampled trader was 6, 7.15, 5.8, 6.66 persons for local collectors, retailers, processors, wholesalers respectively. In addition, years of experience in honey trading 10, 13.23, 12.8, for local collectors, retailers, processors, wholesalers respectively. Concerning the education status of the trader for local collectors, retailers, processors, wholesalers the mean was 5.88, 6.69, 11.9, and 5.66 respectively.

Concerning the sex of trader 38.1 percent, 69.2 percent, 66.7 percent, 41.7 percent was male local collectors, retailers, processors, wholesalers respectively. Moreover, the rest about 61.1

percent, 30.8 percent, 33.3 percent, 58.3 percent was local collectors, retailers, processors, wholesalers respectively.

About the marital status of the trader 61.1 percent, 61.5 percent, 85.7 percent, 58.3 percent was married for local collectors, retailers, processors, wholesalers respectively, 22.2 percent, 23.1 percent, 14.3 percent, 33.3 percent, was married for local collectors, retailers, processors, wholesalers divorced respectively and the rest was 16.7 percent, 15.4 percent, 8.4 percent for local collectors, retailers, wholesalers respectively.

Regarding the religion of the trader local collector 27.81 percent, 72.21 percent was orthodox and Muslim respectively, retailers 15.4 percent, 30.8 percent, 46.2 percent, 7.6 percent respectively, 100 percent of the processors were orthodox and wholesalers was 33.3 percent orthodox and the rest 66.6 was Muslims.

Socio-economic characteristics include financial assets such as initial capital, working capital, source of capital and source of loan. The initial and working capital could be one of the indicators of the financial position of a given trader through it does not necessarily show the financial progress of the firm.



Figure 5: keta muduga union

Source: own computation

Table 12: Financial capitals of all sampled traders

Variable	Number of respondent	Mean	SD
Initial capital	30	6,166.67	2,440.31
Working capital	30	35,500	4,221.31

Source: Survey result, 2017

As depicted in Table 12, the average initial capital of sampled honey traders was birr 6,166.67 and the standard deviation is 2440.31. With regard to current working capital, the survey re-



sult shows in 2017 average working capital of sampled honey traders was birr 35,500 and the standard deviation is 4,241.31.

Table 13: Source of working capitals and loan of sampled traders

Source of working capital	Frequency	percentages
Own	6	20
Other trader	5	16.7
Micro finance	17	56.7
Friends	2	6.7
Total	30	100

Source: Survey result 2017

As indicated in Table 13, most of traders’ working capital originated from internal source than external sources. About 20 % of sampled traders were using their own capital while about 16.7 % get loan from other traders. The smallest proportions of about 56.7% and 6.7 % sourced their working capital from micro finance and friends respectively.



Figure 6:- Sample trader

Source: Own computation

#### 4.6. Demographic Characteristics of Sampled Consumers

As it is portrayed in Table 14 male; that is 66.7 % dominated sampled consumers and the remaining 33.3 % were female. This implies that male involvement in the purchase was high.

The overall mean age of the respondents was 42.7 years with standard deviation of 9.51. The average family size of the consumers was 6.26 persons with standard deviation of 1.54. The consumers have an average of 16.8 years of experience in purchasing honey for consumption with standard deviation of 10.3. Regarding marital status of the consumers, the majorities 81 % of the consumers were married, 9.52 % were single and the rest 4.76% sampled respondents were divorced. The educational level of consumers showed that 9.5 % attended primary school, 66.6 % attended secondary school, and the left 23.8 % had certificates and above.

Table 14: Demographic characteristics of sampled consumers

Variable	Item	Frequency	Percentage
Sex	Male	7	33.3
	Female	14	66.7
Education	primary	2	9.5
	Secondary	5	66.7
	Certificate and above	14	23.8
Marital status	Single	3	9.52
	Married	17	81
	Divorced	1	4.7
Religion	protestant	2	9.5
	Orthodox	10	47.6
	Muslim	9	42.9
		Mean	SD
Age		42.7	9.51
Family size		6.26	1.54
experience		16.8	10.3

Source: survey result 2017

#### Means of livelihood of the consumers

The consumers earn their income from different sources and the purchasing powers of the consumers depend on their income level. About 58.6% and 41.4% of consumers earned their income from trading and employment, respectively. The result shows that average monthly income of sampled consumers of birr 6900 and on average about 180 birr of the income was spent for honey consumption per month.

Table 15: Monthly incomes and proportion spent for honey consumption.

No of respondent	Mean income Birr /month	Mean income spent for consumption of honey (birr /month)
21	6900	180
Source of income	Frequency	Percent
Trade	4	19.1
Farming activity	9	42.8
Employment	8	38.1
Total	21	100

Source: survey result, 2017

#### 4.7. Value Chain Analysis

This part discusses the structure and composition of honey value chain.

##### 4.7.1. Honey value chain map in the study area

Value chain mapping enables to visualize the flow of the product from conception to end consumers through various actors. It also helps to identify the different actors, supporters, and enablers involved in the honey value chain and to understand their roles and linkages (McCormick and Schmitz, 2001).

##### 4.7.2. Honey value chain actors and their role

Value chain actors are categorized under two important sections; these are direct and indirect actors. According to KIT *et al.*(2006), the direct actors are those involved in Commercial activities in the chain (input suppliers, producers, traders, retailers, and consumers) and indirect actors are those that provide financial or non- financial support services, such as credit agencies, business service providers, government, NGOs, cooperatives, researchers.

In the study area, there are different actors involved along the honey value chain. The major actors participating brown/red honey value chain and their roles are discussed below.

Input suppliers: The District Fish and livestock agency, cooperatives, union, and AGP (NGOs) operating in the district are the main responsible actors for the delivery of inputs like hives and accessories in the study area. Development agents and district agricultural experts are playing facilitation role in collecting farmers input requirement demand and submitting to

the district agriculture office, then they communicate with the stakeholders to fulfill the input demands of the farmers.

The major actors involved in honey value chain in the study area are producers, collectors, wholesalers, retailers, processors (*tej* makers), cooperatives, union, and consumers. The main value adding activities undertaken at each stage of the chain were transporting, sorting and packaging, filtering and processing.

Beekeeper /Producers/: are the major actors who perform most of the value chain functions from the procurement of the inputs to harvesting and marketing. The major value chain functions that honey producers perform in the study area include sorting, filtering, packaging, and transporting. Most of the honey producers in the study area sell their products in Gomma district and Aggaro town.

Table 16: Amount of honey supplied (kg) to market participants by farmers in 2017

Market participant	Amount of sold	Percentage
Collectors	7234	27.25
Whole sellers	1779.5	6.70
Retailers	1970	7.4
Processor	2161	8.13
Cooperatives	12064.5	45.44
Consumers	1339	5.04
Total	26,548	100

Source: survey result 2017

Collectors: These are farmer traders collect honey at farm gate level from the producers and sell it to wholesalers and retailers in the district market.

Wholesalers: These actors buy of honey either from collectors or from producers and resell to other traders.

Retailers: These are key actors in honey value chain in Gomma district and Agaro town. They connect the wholesalers and urban consumers by offering according to the requirement and purchasing Power of the buyers.

Processors: These are retailers in both in urban and rural areas who purchase crude honey from wholesalers and supply honey to consumers in the form of brewery locally known as *berwery/ tej/*.

Cooperatives: They are farmer's organization created by farmers and providing services such as hives, accessories buy large quantity of honey from farmers at a fair price and after *they* bought, they give a dividend to farmers. However, in the study areas the activities they were performing were not satisfying farmers because they were not efficient enough in terms of timely provisions of agricultural input and buying of their harvested products. These major actors directly participate in marketing of honey and support honey producers in the district. These actors organize the farmer households to regularly supply filtered honey to them and then sell it to consumers. There are 10 Cooperatives in the district are jointly working with 10 *kebeles* with member of 333 male and 34 female households.

Cooperative union: Cooperative unions are engaged in multipurpose marketing, input distribution, and training the management members of primary cooperatives. The cooperative union purchase honey directly from primary cooperatives. In the study area, there is a cooperative union called keta muduga .Number of primary cooperative 35, members of primary cooperatives 12,165 Male and 1439 female members. Honey collected from primary cooperative was potentially supplied to Addis Ababa market.

Consumers: These final actors of the chain buy the product for their own consumption purpose. They may afford it either as processed (*tej*) form or as non-processed form.

Supporting services and enablers: These actors are those who provide supportive services including training and extension, information, financial and research services. According to Martin *et al.*, (2007) in a value chain, enablers include all chain-specific actors providing regular support services or representing the common interest of the value chain actors. The supporting function players for the honey value chain are those who are not directly related to the honey value chain but provide different supports to the value chain actors. The support functions include different services (e.g. credit, input supply, training and extension service and follow up, research and development, infrastructure, and information). Support service providers are essential for value chain development and include sector specific input and equipment providers, financial services, extension service, and market information access and dissemination, technology suppliers, advisory service.

In the study areas, there are many institutions supporting the honey value chain in one way or another. The most common support providers are District Livestock and Fishery Resource Development Office, District Trade and Market Development office, Oromia Micro Finance Institutions, Private transporters, and Jimma Agricultural Research Center, bank, private credit providers, and private input suppliers. Some service providers extend services beyond one function and others are limited to a specific function.

District Livestock and Fish Resource Development Office provide agricultural extension services to producers through experts and development agents. The office provides advisory service, facilitate access to inputs and provide technical support in honey production, use of modern hive, post-harvest handling. The key informant's interview point out that the producers get extension service on honey production and use of improved hives. With regard to extension contact, among the total sample households, 81.3% have contacted extension services providers. However, the farmers are not receiving sufficient specific service regarding input supply, specific training and finance related issue in the study area. In the study areas, there is no cooperatives established that support producers in the value chain of honey.

Financial services: In the study area, formal and informal credit institution is potential sources of funds. The most common sources of loan are relatives/friends, since they do not require collateral and interest rate. Moreover, it was found that NGOs, micro finance and banks are operating in providing technical service and offers credit support to the farmers. However, the farmers are not receiving sufficient service regarding finance related issue because farmers are not participating in the credit market. The survey result showed that 53 % of the sample households took credit. From the total farmers participated in the credit market, 17.5 % of farmers participated in the formal credit market and 82.5% participated they are not credited market. This has probably something to do with the religious background of the households that prohibits paying and/or earning interest.



#### 4.8. Honey Marketing Channels and Margin

This part discusses the major flow directions of honey among different actors in the Value chain. It is intend to summarize the value chain map in the figure 7 and provide a systematic knowledge of the flow of honey from their origin (producer) to their final destination (consumer). According to the quantity of honey passes through the actors, there are nine main channels,

Channel I: Producer–Consumer=1339 kg

Channel II: Producer–Cooperatives-Consumers=3559.02 kg

Channel III: Producer- Cooperative- union-Consumer = 8505.4 kg

Channel IV: Producer –Retailers-Consumers =1970 kg

Channel V: Producer – Collector -Processor –Consumer = 2909.8 kg

Channel VI: Producer - Collector-wholesaler- Retailer –Consumers =4324.5 kg

Channel VII: Producer - wholesaler-Retailers – consumers = 453.3 kg

Channel VIII: Producer – wholesaler -Processor -Consumers = 1325.7 kg

Channel IX: Producer -processors – Consumers= 2161 kg

Channel I: Producers -Consumers: This channel is the shortest channel at which producers directly sell to consumers at farm gate. It represented 5.04 % of the total honey marketed, which amounted to 1339 kilogram of honey during the survey period. The channel was found to be the third least important in terms of volume. .

Channel II: Producer - Cooperative - Consumer: Cooperatives are buying honey from producer directly sell to consumers at farm gate. It represented =13.41% of the total honey marketed which amounted to 3559.02 kilograms of honey during the survey period. The channel was found to be the third most important in terms of volume.

Channel III: Producer- Cooperative- union-Consumer:

Cooperatives are buying honey from producer directly sell to unions. It represented 32.1 % of the total honey marketed, which amounted to 8505.48 kilograms of honey during the survey period. The channel was found to be the first most important in terms of volume.



Channel IV: Producer –Retailers-Consumers: Retailers are buying honey from producers in the study area and they sell to consumers. It accounted for 7.42 % (1970 kg) of total honey marketed during the survey period. The channel was found to be the fourth least important in terms of volume.

Channel V: Producer -Collector -Processor –Consumer: Rural collectors are buying honey from producers in the study area and they sell to processor. It accounted for 10.96 % (2909.8 kg) of total honey marketed during the survey period. The channel was found to be the fourth most important in terms of volume.

Channel VI: Producer - Collector-wholesaler- Retailer –Consumers: Rural collectors are buying honey from producers in the study area and they sell to wholesalers .It accounted for 16.29% of the total honey marketed, which amounted to 4324.5 kilograms of honey during the survey period. The channel was found to be the second most important in terms of volume.

Channel VII: Producer - wholesaler-Retailers – Consumers: wholesaler are buying honey from producer directly sell to retailers. It represented 1.7 % of the total honey marketed, which amounted to 453.3 kilograms of honey during the survey period. The channel was found to be the first least important in terms of volume.

Channel VIII: Producer – wholesaler -Processor -Consumers: In this channel, wholesalers are buying honey from producer in the study area and they sale directly to processor. It accounted for 4.97 % (1325.7 kg) of total honey marketed by sample honey producers during the survey period. The channel was found to be the second least important in terms of volume.

Channel IX: Producer -processors – Consumers: In this channel, processors are buying honey from producer in the study area and they sell to consumer in the form of Local brewery (*tej* and *berz*). It accounted for 8.12 (2161 kg) of total honey marketed by sample honey producers during the survey period.

The amount of honey transacted in these market channels was different. Out of total 26548 kilogram of honey marketed by sampled households during survey year 8505.48 kilogram was marketed through channel III: 4324.5 kilogram was through channel VI; and 3559.02 kil-

ogram was through channel II that were found to be dominant in terms of honey volume of transaction. The survey results revealed that wholesalers and retailers were the dominants receivers of honey with percentage share of 42.9% and 28.2%, respectively in terms of volume of honey supply.

#### Marketing margins of honey in different channels

Marketing margins of honey in the nine channels for each group of market players are given in Table 16s. GMMp, GMMc, GMMr, GMMw, GMMco, GMMpr and GMMun are gross marketing margins of producers, collectors, retailers, wholesalers, cooperatives, processors and union respectively. TGMMc, TGMMr and TGMMw, TGMMco, TGMMpr, TGMMun, are net marketing margins of collectors, retailers and wholesalers, cooperatives, processors and union respectively.

Table 17:-Marketing costs and benefit shares of actors

Item (birr/kg)	Channel							sum
	Pro- ducer	Col- lector	retailer	Whole seller	Coope retives	Un- ion	Proc essor	
Purchase price	-	68	83.33	70.33	78	93	78.66	471.20
Production cost	24.50	-	-	-	-	-	-	24.50
Processing cost			2				5.50	5.50
Market cost								
Labor cost	4.50	1	2	1.50	1.25	1.25	1.50	13
Loading/unloading	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.70
Transport	0.75	0.50	0.50	0.50	0.50	0.50	0.50	3.75
Packing material	-		1		2	3	2	8
Store rent			.20	.20	-	.30	-	0.70
Shop rent			0.10	0.10		.20	.20	0.60
Tax			0.10	0.10			0.10	0.30
Telephone	0.10	0.20	0.20	0.20	0.25	0.20	0.20	1.35
Packing material	0.45	0.40	0.40	0.40	0.40	0.40	0.40	2.85
Plastic sack								
Total marketing cost	5.90	2.20	6.60	3.10	5.95	5.75	10.50	40
Total cost	43.50	70.20	89.95	73.45	83.95	98.75	89	548.80
Sale Prices	67.45	84.33	107.65	91.66	94	105	120	670.09
Market margin	42.95	16.35	24.30	21.30	16	12	41.50	174.40
% share of margin	24.63	9.38	13.93	12.22	9.17	6.88	23.79	100
Profit margin	23.95	14.15	17.70	18.20	10.05	6.25	31	121.30
% share of profit	19.75	11.66	14.60	15	8.28	5.15	25.56	100

Source: Own computation result, 2017

Table 18: Honey marketing margin for different channels (Birr/kg)

Agents		Honey market channels								
		I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
Producer	Production cost	24.5	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50
	Selling price	75	78	78	70	68	68	68	68	70
	GMMp %	100	66	61.1	36	37.1	53.3	41.4	41.09	34.1
Collector	Purchase price					68	68	68		
	Selling price					83	75	95		
	GMMc %					18.07	9.33	28.42		
Retailer	Purchase price				70		85	95		
	Selling price				98		115	110		
	GMMr %				28.57		26.08	13.63		
Wholesaler	Purchase price						75	68	68	
	Selling price						85	95	95	
	GMMw %						11.76	28.42	28.42	
Cooperative	Purchase price		78	78						
	Selling price		95	93						
	GMMc %		17.89	16.12						
Union	Purchase price			93						
	Selling price			105						
	GMMu %			11.42						
Processor	Purchase price					83			83	70
	Selling price					120			120	120
	GMMpr %					30.83			30.83	41.66
	TGMM	0	17.89	27.54	28.57	48.9	47.17	70.47	59.25	41.66

Source: Own computation from survey result, 2017

As indicated in Table 18, total gross marketing margin (TGMM) is highest in channel VII, VIII and V, which was 70.47 %, 59.25 % and 48.9 respectively and lowest in channel VII, which was 17.89 %. Producers share (GMMp) was highest in II and III, which account 66 % and 61.6% respectively from the total consumer's price and lowest in channel IX and IV, which is 34.1% and 36%, respectively. This difference might support the theory that as the

number of marketing agents increases the producers share decreases. The reason being, the higher number of intermediaries/middlemen/ in the commodity market, the more profit they retain for their services whether they add value to the item or not.

The results also shows that the maximum gross marketing margin from traders was taken by processors, which accounts 41.66% of the retailers price in channel IX and 28.57% in channel IV followed by which wholesalers was 28.42% in channel VIII. This implies share of market intermediaries in the consumer's price was substantial and there was a need to reduce market intermediaries to minimize the marketing margins and thereby enhance the producer's income .The minimum gross margin was taken by rural collectors operating in the area, which was 9.33 % in channel.

The result of marketing margin analysis showed that the total gross marketing margin (TGMM) is the highest in channel VI, V and VII, which is about 54.59, 52.2,46.22 % respectively .Retailers and collector have got the highest gross marketing margin in channel VI and VII, respectively whereas union have got the lowest marketing margin in channel III.

#### **4.9. Econometric Results**

In this section, the selected explanatory variables were used to identify the determinants of volume of honey supplied to market.

##### **4.9.1 Determinants of volume supplied to market**

Analyses of determinants affecting volume of honey supply were found to be important to identify factors constraining honey supply to market. Prior to fitting multiple linear regressions, the hypothesized explanatory variables were checked for existence of multicollinearity, heteroscedasticity.

Test of heteroscedasticity: Since there is no heteroscedasticity problem in the data set, the parameter estimates of the coefficients of the independent variables  $\text{Prob} > \chi^2 = 0.0120$  which is less than 0.05 this indicate there is no heteroskedacity between the variables.(Appendix Table 4).using Breusch-Pagan / Cook-Weisberg test for heteroskedasticity in STATA.

Test for Multicollinearity: All VIF values are less than 10, which is 1.5. This indicates absence of serious multicollinearity problem among independent continuous variables (Appendix Table).The results obtained from analysis shows that  $R^2$  value of 0.8872 and the adjusted

value is 0.8779. The number of significant variables are seven (table 21), likewise the value of CC ranging between 0.09 and 0.32. Hence, multicollinearity was not a series problem both among the continuous and discrete variables. For details, (Appendix Table 1 and 2).

The coefficient of multiple determinations ( $R^2$ ) was estimated 0.8872 and the adjusted value is 0.8779. This means that 88.7% of the variation in the dependent variable is explained by the explanatory variables included in the model. Furthermore, the adjusted  $R^2$  of 87.7% that is significant has further consolidated the goodness of the model, hence, its econometrics significance and reliability.

The econometric result in table 21 shows among the twelve hypothesized determinants of marketed supply of honey seven variables were found significant.

The remaining five variables (sex, family size households, credit use, bee keeping experience, access to market information) were found to have no significant effect on honey marketed supply. The explanations on the effect of the significant explanatory variables are discussed below.

Table 19: Determinates of quantity of honey supplied to market

QTSUPP	Coef.	Robust Std.Err	t	P>  t
SEX	5.304255	15.23551	0.35	0.728
HhSZ	-0.9751658	1.693739	-0.58	0.566
EDLH	6.693116	1.699356	3.94	0.000 ***
DRNMC	-8.477154	1.693754	-5.00	0.000 ***
CRED	0.0017145	.0011797	1.45	0.149
FOEX	36.79896	5.082287	7.24	0.000 ***
NBHO	5.62339	.5483668	10.25	0.000 ***
INCOME	0.0006035	.0002649	2.28	0.025 **
BEEKEX	0.1527167	1.360478	0.11	0.911
TBH	50.6307	6.918173	7.32	0.000 ***
COOPM	17.61203	8.792966	2.00	0.048 **
ACMI	1.00901	7.618809	0.13	0.895
cons	102.9143	39.74669	2.59	0.011 **

R-squared = 0.8648

Note: Dependent variable quantity of honey supplied to Market 2017

\*\*\*, \*\*, significant at 1, 5 % level respectively

Number of obs = 119

Source: Own computation from survey result, 2017

### **Education level**

As hypothesized, the result showed that education was significantly influenced on honey supply to market at 1% level of significance. On average, if honey producer gets educated, the amount of honey supplied to the market increases by 6.69 kg. This suggests that education improves level of sales that affects the marketable surplus. In consistent with the finding of Assefa (2009).

### **Distance from the nearest markets (DNM)**

It affected the volume of honey supplied to market negatively and significantly. The model result indicated that, keeping other variables constant, as the distance of the farmers' residence from the nearest market increases by one kilometer, the volume of honey supplied decreased by 8.47 kilogram. This may be because as the farmers reside far from the nearest market the transport cost for selling their output would be high. This implies that as the distance from the nearest market increases, transport costs and loss due to handling increase and this may discourages producers from selling high volumes of honey. The result is consistent with the findings of kassa *et al.*, (2017) ,Biruk (2015) and Efa *et al.*, (2016).

### **Frequency of extension contact (EXTCONT)**

It was positively and significantly related to the quantity of honey supplied to the market at 10 % significance level. The positive and significant effect was mostly due to the reality that beekeepers who frequently contact extension worker concerning beekeeping particularly about modern honey production, harvesting and handling methods contributed to increase the amount of honey supplied to market. The model result predicts that increase in number of extension contacts per year by one in relation honey production, increases the amount of honey marketed by 36.79 kilogram. This suggests that frequent extension contact avails information regarding improved technology, which improves production that in turn affects the marketed surplus. This is in line with finding of Ayantu (2018), Kassa *et al.*, (2017), Samuel (2014), and Getachew (2009).

**The number of beehives owned (NBHO):** It is proxy variable for quantity of honey produced and positively influence the volume of honey supplied to market at 1% significance level. This indicates that producer with more number of beehives can harvest more volume of honey and not only having of better marketable surplus but will able to sell more. The model result indicated that as the number of hives used increased by one, the volume of honey mar-

keted increased by 1.35 kilogram. Kerealem *et al.*, (2009) confirmed that the use of large number of hives directly related with the amount supplied to the market and return earned by beekeeper. This result is also in line with finding of Kassa *et al.*, (2017) and Getachew (2009).

**Annual income excluding income from beekeeping in ETB (INCOME)** :It was positively and significantly related to the quantity of honey supplied to the market at 5 % significance level. An increase in income of the farmers by one the volume of honey supplied to market increased by 0.006 kilogram. The positive and significant effect was mostly due to the reality that beekeepers that have income from farm and off farm activities increase the amount of honey supplied to market farmers can bought hives and accessories that increase honey production as a result increase quantity of honey supplied to market.

**Type of beehive used (TBH)**: This is a categorical variable that affects positively decision to sell how much of the honey produced. In addition, type of beehive used to produce honey-affected supply of honey to market positively and significantly at 1% level of significance .This can be explained as farmers possessing modern beehives produce better volume than those who use the traditional one and the more they produce, the more they tend to supply to the market. This is in line with finding of Ayantu( 2018) , Kassa *et al.*, (2017), and Betselot (2012).

**Cooperative membership (COOPM)**: It influence positively and significantly, the volume of honey marketed at 10% level of significance. As compared to those households who are not member of cooperative , for those household who are members of cooperative, the volume of honey marketed increased by 17.61 kg. Being a member of producer group motivates farmers to supply more by giving technical advice, input and up to date information provision to members (Adeoti *et al.*, 2014). Study by Shewaye (2015) also confirmed that being membership of cooperative could have better access to market information, inputs, Technical advice and access to credit facilities which grid towards increments of output that in turn increase volume of supply to market. Kassa *et al.*, (2017) also confirmed that cooperatives motivate producers to supply more by giving technical advice, input and up to date information to members which grid towards increments of output that in turn increase volume of honey supply and improve bargaining power of producers in time of selling their produce.



#### **4.10. Challenges and Opportunities in Honey Value Chain**

There are number of challenges, opportunities and the different value chain actors identified entry points for further technological, institutional, and organizational innovation for upgrading the value chain in the study area. In this subsection, the major constraints and opportunities are briefly discussed.

One of the merits of value chain analysis is that it helps to clearly identify bottlenecks to the development of the chain right from input supply until the consumption level in intensive way. Accordingly, different actors through semi-structured questionnaire explain a number of constraints and opportunities. From results, major constraints, which are currently hindering the development of the honey value chain, can be categorized according to the three basic stages: the farm level, the marketing/traders stage, and consumer stage.

At the farm level, key constraints faced by beekeepers are Agro-chemicals, shortage of improved beekeeping equipment, lack of improved honey production skill, absconding of bee colony, seasonal shortage of forage, diseases and pest, lack of formal honey market, in adequate credit service, lack of market information, death of colony and lack of honey cooperative union /the existing was multipurpose in the district.

Concerning credit and marketing 2.2%, 9.4%, 2.9% and 7.9% of sampled beekeepers reported problem of harvest time price variation, lack of formal honey market in the District, lack of market information and lack of credit, respectively (Table 18). This will make producers to not fully utilize their full capacity and limit the amount of honey-marketed surplus. As a result, producers became at the position of price taker in honey value chain in the district.

##### **4.10.1. Production constraints**

There are factors that hinder the production of honey products in the study area. The majority of the sample producers indicated that Application of chemicals, Lack (High cost) of modern beehives and accessories, diseases and pest, bee colony absconding and Lack of improved honey production skill. The major constraints of honey production are discussed below in Table 20.

Table 20:-Major constraints of honey production by sample respondent in the study area.

Constraint	No of respondent	Percentage
Agro chemicals	39	32.7
Shortage of beekeeping equipment	21	17.5
Disease and pest	19	15.9
Absconding of bee colonies	18	15.1
Seasonal shortage of forage	14	11.8
Lack of improved honey production skill	8	7

Source: Own computation survey

Based on the result of this study Agro chemicals mainly insecticides and herbicides was major challenge to the honeybees and beekeepers (32.7%),out of the total respondent responded, followed by shortage of beekeeping equipment(17.5%),disease and pest (15.9 %),farmers dicated that ants, wax moth (*Galleriamellonella*),bee eater birds spider bee lice(*Baraulacoecal*) ,honey badger(*Mellivoracapensis*),monkey, small hive beetles (*Aethinatumida*) and lizard were the most harmful pests in decreasing the production of honey.Desalegn (2001), Solomon (2009), Tessega (2009) and Kinate et al.,(2012), in the central, southeast highlands of Ethiopia, Burie and Gamma district respectively respectively, reported similar findings.

Absconding of bee colonies 15.1 percent. It was observed in the survey that in general, absconding and migration are the ultimate occurrence of poor management , such as Application of Agro chemicals lack of forage, incidence of pests and predators, during harvesting, sanitation problem, bad weather condition and bee diseases .Should be well managed year round with special emphasis to dearth periods and season of reproductive swarming. Similar with the finding Kinate *et al.*, (2012),Gomma district of Jimma zone, South-west Ethiopia. This Survey revealed that Seasonal shortage of forage 11.8 % and lack of improved honey production skill 7 %.

#### 4.10.2. Production opportunities

According to the respondents, the major opportunities for bee keeping in Gomma district include:, availability of potential flowering plants, Indigenous beekeepers knowledge & experience Abundance of honey bee, ample sources of water for bees, socio-economic value of honey, Market demand for bee products , Presence of Gov. and NGOs who are involved in bee-

keeping activity , Existence of cooperatives and unions. (Table 24). The result is in agreement with Crane (1990), Ayalew (1994) and EARO (2000). Kinati *et al.*, (2012).

Table 21 : Opportunities identified by respondent beekeepers in the study area

Opportunity	percentage
Availability of potential flowering plants	29.3
Indigenous beekeepers knowledge & experience	20.6
Abundance of honey bee	14.2
Water availability	11.7
Socio economic value	9.6
Market demand for bee products	8.3
Presence of Gov. and NGOs who are involved in beekeeping activity	4.3
Existence of cooperatives and unions	2

Source: Own computation survey 2017

#### Honeybee plants

According to the results of this survey, 29.3% of respondent was responded, Availability of potential flowering plants the honeybee plants of the study area comprise of trees, shrubs, herbs and cultivated crops, which are a source of nectar and pollen. Vegetation characteristics of the study areas were considered an important indicator for potentialities of the area for beekeeping. The honeybee flora compositions of Gomma district are perennial crops (especially Coffee), annual herbs, and some natural trees having significant contribution for beekeeping.

This variation in vegetation characteristics of the area could be potentially suitable for effective distribution of honey production at various seasons. the study is related to study by kinati (2009).Beekeeping is more dependable on ecological suitability of an area than any other livestock production (Nuru, 2002).Those author also noted that, the honeybee population and their productivities in general are mainly influenced by the nature of honeybee flora of an area. The resources supplied by plants are important sources of nectar, pollen, and propolis; some are also important for hive construction while others used in local procedures for scenting new hives to attract swarms.

#### 4.10.3. Marketing constraints

The major marketing constraints rose by farmers and traders of the study area were unfair Pricing and cheating of traders on balance; lack of timely and sufficient market information; Low price of commodities at harvest time; high price of hives and accessories; weak market

linkages among value chain actors and less bargaining power of farmers in the market. There are also regular market fluctuations and shortage of standardized packaging material. Different actors involved in honey production and marketing acknowledge that there are different quality problems.

Traders collect their merchandise from different sources, places, and individuals and do not have quality standards. What majority traders tend to do is to purchase any quantity from anyone offering the same price for whatever quality or offering a lesser price for inferior quality products. After purchasing, the traders then do not pack the products they have collected in accordance with the different grades of quality. Rather they tend to mix up the good and bad quality grains together and sell it at the price of good quality, as the prevailing price does not give quality premium. Traders do this for two reasons, one they increase their profit margin and secondly because buyers are unable to check the quality and pay quality price for quality produce. Some traders rose that there is adulteration problem (mixing honey with sugar and other material on behalf of some collector that can lose their reputation by their consumer. Consequently, this contributes for commercialization of rural economy and creates many off-farm jobs opportunities. Furthermore, provision of infrastructure facilities like telecommunication, power supply, and financial institutions Micro-Finance, NGO's like AGP, which are acting on honey value addition, training, and facilitating market supports the marketing activities in the study area.

Table 22 : Major Marketing Constraints in the study area

Constraints	Percentages
Price setting problem	26
Lack of product standard of honey value chain actors	19
Limited function of cooperatives and unions	17.5
Presence of unlicensed traders	16
Lack of formal honey market	7.5
In adequate credit service	6
Lack of market information	5.5
Poor transport facilities	2.5
Total	100

Source: Own computation survey, 2017

#### 4.10.4. Marketing opportunities

There are many opportunities for the honey value chains actors in Gomma district. Availability of market demand throughout the year, growing number of buyers, existence of infrastructure and telecommunication, presence of established cooperatives and union even though, it was multipurpose better market access to district, jimma and Addis Ababa market, high market demand for bee product.

Table 23: Marketing opportunities in the study area

Opportunity	Percent
Availability of market demand throughout the year	53.8
Growing number of buyers	24.6
Existence of infrastructure and telecommunication	17.4
Presence of established cooperatives and union even though, it was multipurpose	4.2
Total	100

Source: Own computation survey, 2017

## 5. SUMMARY, CONCLUSION AND RECOMMENDATIONS

### 5.1. Summary

This study was aimed at analyzing value chain of honey in Gomma District of Oromia region. The specific objectives of the study include identifying the respective the roles of the actors and mapping honey value chain, identifying marketing margin distribution of actors, analyze the determinants of honey supply to the market and identifying constraints and opportunity of honey marketing, in the study area.

To address the objectives of the study both quantitative and qualitative methodologies were used. The data were generated from both primary and secondary sources.

The primary data were collected through personal interviews from 215 respondents (119 producers, 64 traders, 10 cooperatives, 1 union and 21 consumers) using semi-structured questionnaires.

Descriptive statistics and econometric model were used to analyze the collected data. Multiple linear regression models was adopted to understand the determinants of volume of honey supplied to market by farmers .The findings of this study are summarized as follows.

Out of 119 total household heads, interviewed 94.1% were male headed while 5.9% were female-headed households.

The survey revealed that the mean land size of sampled households of 2.5 hectares. The result indicated that (95.8 %) were married .25 divorced and only 1.7% widowed household heads. The survey result indicated that mean age of sampled household was 44.26 years, and average family size of the sampled household was 5.86 persons. The mean educational level of sample respondents was grade 2.71 with the standard deviation of 2.19. This implies that majority of the beekeeping households are literate though they are with low educational level.

The major actors involved in honey value chain include input suppliers, honey producing farmers, wholesalers, retailers, processor, collectors, cooperatives, union and consumers. Honey producers, DOoARD, fish and livestock Development, primary cooperatives, private hive and beekeeping accessories vender suppliers, AGP(NGO's) were the main actors involved in the production and input supply activities. Collectors were engaged in collectors from remote areas and sell at town markets to wholesalers, and processors. Wholesalers purchase honey from farmers and collectors and sell to retailers and processors. Retailers pur-

chase honey from producers and wholesalers and sell to consumers. Processors purchase from farmers, wholesalers, collectors and sold to consumers. Cooperatives were purchase honey from farmers' members, non-members, and sell to consumers and union. Union purchase from cooperatives and sold to consumers to Consumers at Aggaro, Jimma and Addis Ababa.

About nine different honey market channels were identified with each channel having different marketing margins. The result of marketing margin analysis showed that the Total gross marketing margin (TGMM) is highest in channel VII, VIII and V, which was 70.47 %, 59.25 % and 48.9 respectively and lowest in channel VII, which was 17.89 %. Producers share (GMMp) was highest in II and III, which account 66 % and 61.6% respectively from the total consumer's price and lowest in channel IX and IV, which is 34.1% and 36%, respectively.

The results also shows that the maximum gross marketing margin from traders was taken by processors, which accounts 41.66% of the retailers price in channel IX and 28.57% in channel IV followed by which wholesalers was 28.42% in channel VIII. This implies share of market intermediaries in the consumer's price was substantial and there was a need to reduce market intermediaries to minimize the marketing margins and thereby enhance the producer's income .The minimum gross margin was taken by rural collectors operating in the area, which was 9.33 % in channel.

The result of marketing margin analysis showed that the total gross marketing margin (TGMM) is the highest in channel VI, V and VII, which is about 54.59 %, 52.2%,46.22 % respectively .Retailers and collector have got the highest gross marketing margin in channel VI and VII, respectively whereas union have got the lowest marketing margin in channel III.

Econometric results of multiple linear regression models indicate that education level, frequency of extension contact, the number of beehives owned, annually income excluding income from beekeeping, type of beehive used, cooperative membership positively and distance from the nearest markets negatively and significantly determining the quantity of honey supplied to the market.

The overall honey value chains are constrained by a number of factors, which hinder the development of honey value chain. At farm level, the major production constraints are, Agrochemicals, shortage of improved beekeeping equipment, lack of improved honey production skill, absconding of bee colony, seasonal shortage of forage, diseases and pest, lack of formal honey market, in adequate credit service, lack of market information, death of colony and lack

of honey cooperative union /the existing was multipurpose. Major opportunities were availability of potential flowering plants, Indigenous beekeepers knowledge & experience Abundance of honey bee, ample sources of water for bees, socio-economic value of honey, Market demand for bee products , Presence of Gov. and NGOs who are involved in beekeeping activity , Existence of cooperatives and unions.

The major marketing constraints rose by farmers and traders of the study area were unfair Pricing and cheating of traders on balance; lack of timely and sufficient market information; Low price of commodities at harvest time; high price of hives and accessories; weak market linkages among value chain actors and less bargaining power of farmers in the market.

There are many opportunities for the honey value chains actors. Availability of market demand throughout the year, growing number of buyers, existence of infrastructure and telecommunication, presence of established cooperatives and union even though, it was multi-purpose better market access to district, jimma and Addis Ababa market, high market demand for bee product.

## **5.2 .Conclusion**

Generally, processing beehive produce in to honey, wax, and other products is a way of adding value. Beekeepers need improved input supply system and successful collective marketing of their hive products. Enforcing and restructuring the existing beekeeper cooperatives unions and in the district. There is need to develop sustainable strategy involving the government, NGOs and farmers in order to increase the production base. Great attention will be given to application of Agro chemicals.

Amount of honey supplied to market by beekeepers determined by education level, distance from the nearest markets, frequency of extension contact, the number of beehives owned, annually income excluding income from beekeeping, type of beehive used and cooperative membership.

The question that now arises and needs to be addressed in order for the productive farmers to become profitable is do they have an access to finance, Strong linkage/interaction among value chain actors, infrastructural support, access to input and knowledge and market. Beekeepers need adequate processing machinery and financing on the beekeeping and processing operations. The beekeepers need a special bank service, which has no interest to address their



particular needs in honey production. Especial attention should be given to enforcing the existing cooperatives, unions and AGP to feel the training, lack of access related with beehives and accessories.

### **5.3. Recommendation**

The recommendations or policy implications to be drawn from this study are based on the significant variables from the analysis of present study.

Based on the results of this study, the following recommendations drawn suggest for policy makers, development actors, and researchers who have strong interest in promoting value chain and upgrading strategies of honey in the study area, the future intervention strategies aimed at the promotion of honey value chain through facilitating chain supporters.

- It is highly recommended to improve the input supply system through encouraging private supplier in the district so that farmers receive the right type of production inputs with full accessory and quality needed approved by governmental bodies at the right time from district market. Improving the supply system would protect beekeepers from unnecessary cost incurred for the purchasing of inputs from different areas with high inputs and transportation cost. In addition, through governmental or non-governmental organizations intervention. This will also improve possibilities for strong and successful collective marketing of their hive products.
- In order to overcome shortage of improved beekeeping equipment, seasonal shortage of forage, problem of Agro-chemicals, diseases and pest, bee colony absconding and lack of improved honey production skill government should give attention to train beekeepers in the District on how to manage bee colony at different seasons. The role of research institutes and universities are crucial in identifying diseases, pest, and causes for death of colony and prevention mechanism to improve production and productivity of honey.
- Strengthening the linkage/interaction among value chain actors is necessary. There is a need to change the outlook of actors, by developing ground rules that will bind the relationship between producers and traders. In particular, positive attitudes toward partnership, interaction, networking, and learning need to be developed among main actors in the value chain. Therefore, the chain actors should work in an integrated way to improve production, and to

strengthen sustainable market linkage in the study areas. In additions to this, organizing (voluntarily) traders and producers and establishing trustful and strong trade agreements between the two institutions is crucial to minimize unfair price created by some traders during harvest time. With a strong relationship between traders and producers, searching for market information and dissemination and controlling of unlicensed traders will be crucial.

- The result showed that honey supplied to market was significantly influenced by education. Therefore continuous education and training on production and marketing would be given by DOoLFRD, DA's and the exiting NGO in the district.
- Since distance to nearest market center was affected negatively and significantly. Therefore district administration, district rural road authority and DOoLFRD would be better to improve rural infrastructure and developing market infrastructure in the form of establishing produce collection points across rural areas would assist poor beekeepers for faster delivery of beehive produces.
- Frequency of extension contact was positively and significantly related .Therefore, DOoARD and DOoLFRD better to aware and follow up DA's to advise , visit and help farmers information regarding improved technology, which improves production that in turn affects the marketed surplus.
- The number of beehives owned indicates that producer with more number of beehives can harvest more volume of honey and not only having of better marketable surplus but was able to sell more. So farmers are advised to use large number of beehives as much as possible to get more honey in order to increase their market supply in its return.
- Annual income excluding income from beekeeping was significant and positively. Therefore district administration, DOoARD, DOoLFRD, Financial institutions like OCSSCO, Exiting primary cooperatives, unions, NGO's would have support the farmers to increase their income from farm and off farm activities increase the amount of honey supplied to market farmers can bought hives and accessories that increase honey production as a result increase quantity of honey supplied to market.
- Since type of beehives, used farmers were significant. Therefore, Framers would have advised/ highly recommended/ to use Modern beehive which is more productive in honey production.

- Cooperative promotion office have to create awareness about the production and market of honey ,supplying of beehives and accessories on fair price ,awareness of advantages of being member of cooperatives ,continuous education and training on production and marketing improving .

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## 7. APPENDIX

Appendix Table 1: VIF for factors affecting volume of honey supplied to market

Variable	VIF	1/VIF
TBH	2.47	0.404793
NBHO	2.21	0.453467
FOEX	2.11	0.474377
COOPM	1.63	0.615099
DRNMC	1.44	0.694353
CRED	1.29	0.774399
BEEKEX	1.27	0.787650
EDLH	1.26	0.793031
SEX	1.17	0.854020
INCOME	1.15	0.866322
ACMI	1.13	0.882487
HhSZ	1.03	0.967459
Mean	VIF	1.51

Source: household survey data, 2017

Appendix Table 2: Multiple linear regression models

Source	SS	df	MS	Number of obs =119
				F (12, 106) =63.92
Model	1001707.41	12	83475.6172	Prob > F =0.0000
Residual	138438.556	106	1306.02412	R-squared =0.8786
				Adj R-squared =0.8648
Total	1140145.96	118	9662.25392	Root MSE =36.13

QSUPP	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]
SEX	5.304255	15.23551	0.35	0.728	-24.90163 35.51014

HhSZ	-0.9751658	1.693739	-0.58	0.566	-4.333169	2.382837
EDLH	6.693116	1.699356	3.94	0.000	3.323978	10.06225
DRNM	-8.477154	1.693754	-5.00	0.000	-11.83519	-5.119121
CRED	0.0017145	.0011797	1.45	0.149	.0006244	.0040535
FOEX	36.79896	5.082287	7.24	0.000	26.72283	46.87508
NBHO	5.62339	.5483668	10.25	0.000	4.536199	6.71058
INCOME	.0006035	.0002649	2.28	0.025	.0000784	.0011286
BEEKEX	.1527167	1.360478	0.11	0.911	2.544563	2.849997
TBH	50.6307	6.918173	7.32	0.000	36.91475	64.34665
COOPM	17.61203	8.792966	2.00	0.048	35.04494	1791212
ACMI	1.00901	7.618809	0.13	0.895	-14.09602	16.11404
_cons	102.9143	39.74669	2.59	0.011	24.11262	181.716

Source: own competition (2018)

Appendix Table 3: Contingency coefficient

Correlate SEX TBH COOPM ACMI

(obs=119)

	SEX	TBH	COOPM	ACMI
SEX	1			
TBH	0.1731	1		
COOPM	0.1093	0.2762	1	
ACMI	0.1679	0.0795	0.0896	1

Source: Own computation 2018

Appendix Table 4: Heteroskedasticity Test

hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of Y

chi2 (1) = 6.32

Prob > chi<sup>2</sup> = 0.0120

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Source: Own computation 2018

Appendix Table 5: Conversion factor used to compute tropical livestock unit

Animal category	Conversion factors
Cattle	0.07
Sheep	0.1
Goat	0.1
Horse	0.8
Donkey	0.5
Camels	1
Poultry	0.01
Mules	0.7

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Source: Varvikko(1991)

## Appendix B. Interview Schedules

I. Producers Interview Schedules Remark:-The personal profile obtained from respondents with regard to the study will kept confidential and will not have any consequence on the respondent in any Ways. Please give correct answers to the following questions.

### Instructions to Enumerators

Make brief introduction before starting any question, introduce yourself to the farmers, and greet them in local ways and make clear the objective of the study.

Please fill the interview schedule according to the farmers reply (do not put your own feeling).

Please ask each question clearly and patiently until the farmer gets your points.

Please do not use technical terms and do not forget local units.

### I. General Information

1. Name of Woreda: \_\_\_\_\_
2. Kebele: \_\_\_\_\_
3. Code of respondent: \_\_\_\_\_
4. Age: \_\_\_\_\_ year
5. Sex of house hold: 1.Male 2.Female
6. Religion:- 1. Protestant 2. Orthodox 3) Muslim 4) others \_\_
7. Marital status of the household head: 1. single 2.married 3. Divorced 4. Widowed/er
8. Education level of household head \_\_\_\_\_
9. Distance to the nearest market \_\_\_\_\_ km \_\_\_\_\_ walking minute.
10. Distance of your residence to the nearest development center \_\_\_\_ walking time (Minutes).
12. Are you a member of any cooperative? (√) 1. [ ] Yes 2. [ ] No
13. If your answer for Q.12 is yes, what is the name of the cooperative \_\_\_\_\_

### B. House hold and Resource Data

1. Family size: Male [\_\_\_\_\_] Female [\_\_\_\_\_]
2. Number of working persons (14-64 ages): Male [\_\_\_\_\_] Female [\_\_\_\_\_]
3. Number of dependents (< 14 and >64 ages): Male [\_\_\_\_\_] Female [\_\_\_\_\_]
4. Do you have your own land? 1) Yes 2) No
- 5-.If yes, how many hectares of land do you have? \_\_\_\_\_
6. Do you have livestock? (√) 1. [ ] Yes 2. [ ] No

7. If your answer for Q.6 is yes, livestock Number: \_\_\_\_Oxen/bulls], \_\_ Cows/heifers [ ], \_\_\_\_ Calves [ ], \_\_\_\_ Goats [ ], \_\_\_\_ Sheep [ ], \_\_\_\_Donkeys [ ], Horses [ ], \_\_\_\_Mules [ ], \_\_\_\_poultry [ ], \_\_\_\_\_Bee hives [ ], \_\_\_\_others
8. Do you have your own transportation facilities? (√) 1. [ ] Yes 2. [ ] No
9. If your answer for Q. 8 is yes, what type? (√) 1,[ ] Vehicle 2. [ ] Transport animals 3. [ ] Cart

#### C.Crop Production

- Do you cultivate crops? 1) Yes 2) No
- What are the major crops types cultivated in your farm?
- Please specify the amount of income earned from major crops

N	Type of Major crops	Production per year	Prod-uct per year	Amount of sell Per production	Price per kg.	Total in come
1	coffee					
2	Maize					
3	Chat					
4	other					

#### D. Livestock holding

- Do you have livestock? 1) Yes 2) No
- If yes, what are the main types of the livestock? 1) Cattle 2) Sheep 3) Goat 4) Donkey 5) Others
- How many of them do you own now?

	Type of the livestock	Number of livestock own
1	Cattle	
2	Sheep	
3	Goat	
4	Donkey	

#### E. Honey production

- How long have you been since you engaged in honey production? \_\_\_\_\_years
- Why do you engage in honey production1.For home consumption 2. For sale 3. Both 4. Others (specify)



3. What inputs you use for honey production and marketing 1. Hives 2. Protective wears

3. Product transporting animals and carts 4.Others specify\_\_\_\_\_

4. What kind of hive you use? 1) Traditional 2) Transitional 3) modern

4) Others specify \_\_\_\_\_

Number of Traditional bee hives \_\_\_\_\_

Number of transitional beehive

Number of modern *beehives*\_\_\_\_\_

Number of other\_\_\_\_\_

5. Who is the supplier of hive for the household? 1, Woreda agricultural office

2. Cooperatives 3. Market 4. NGOs 5.Others (specify) \_\_\_\_\_

6. Have you visited the neighboring apiary? 1. Yes 2.No

7. Did you take training on beekeeping? 1. Yes 2. No

8. If your answer is yes for question number six, who is the provider of training?

1. Government office 2. NGO 3.Private sector 4.Other specifies

9. Do you want to expand your honey production? 1. Yes 2.No

10. If your answer is Yes for question number 9, have you done any activity, which helps to expand the Business 1. Yes 2.No

11. If your answer is yes for question number 10, what activities; you have done to Expand the system? 1. Purchasing new hives 2.Purchasing product transporting

Animals' Or cart 3. Bee feed 4.others \_\_\_\_\_

12. What was your source of finance to purchase this inputs?

1. Income from livestock. 2. Income from crop 3. Gift from relatives and friends 4.

Credit from relatives and friends 5.Credit from formal lending institutions

13. If your answer for question number 10 is No, what will be your source of finance to?

Purchase inputs helps to expand the business. 1) Income from livestock 2) Income From crop 3) Gift from relatives and friends 4) Credit from relatives and friends

5) Credit from formal lending institution

F. Income from None/Off Farming Activities

No	Income type	Income per month	Total income
1	Wage and salary		

2	Petty trade		
3	Remittance		

G. Access to Market Information and price

1. To whom you sold your product (\*Write the codes and multiple result is possible)

Amount produced	Amount sold	To whom	Where
		1.Retailers 2.Wholesalers 3.Processores 4. Cooperatives 5.Collectors 6. Others(specify )	1. Farm gate 2. Market 3. Retailing 4. Others

2. How is the trend of price per quintal of sales of honey during the last 5 years?

3. If increasing, why? \_\_\_\_\_

4. If decreasing, why? \_\_\_\_\_

5. Do your honey products have preferred qualities by buyers? (√) 1.  Yes 2.  No

6. What was your source of information about quality requirement of your customers?

7. Have you added any value on your honey products? (√) 1.  Yes 2.  No

8. Linkage with commercial value chain actors: (√) (Multiple response is possible)

1. Retailers 2.  Whole sellers 3. Consumers 4. Brokers 5.  local Collectors 6. Others (specify) \_\_\_\_\_

9. Do you have access to honey market information in last year? (√) 1.  Yes 2  No

10. Who is your source of information about price? (Multiple responses is possible)

1) Cooperative members 2) wholesalers 3) Retailers 4) consumers 5) TV and Radio 6) Personal observation 7) intermediaries 8) other (specify) \_\_\_\_\_

H. Access to Credit

1. Did you borrow money or (hives and accessories) for honey production for the last production season 2009 E. C ? (√) 1.  Yes 2. No

2. If your answer for Q.1 is yes, from where and for what purpose did you borrowed. (\*Multiple responses are possible)

no	source	Purpose/write

		codes	
1	Microfinance		1.For purchasing hives and accessories
2	Cooperatives		2. for purchasing packaging and storage materials
3	NGOs( specify)		3.Payment for hired labor
4	Bank ( specify)		4. others ( specify)
5	Trader		
6	Relatives		
7	Equb /Edir		

3. If your answer for Q.1 is yes, have you repaid it? (√) 1.  Yes 2. No

4. If your answer for Q.1 is No, what is the reason? \_\_\_\_\_

5. Did you face any problem in accessing credit? (√) 1.  Yes 2. No

6. If your answer for Q.5 is “Yes”, what was the problem? (√) (Multiple responses are possible)

1.  Limited supply of credit 2. Limited access to transport 3.  bureaucracy 4.

Others (specify) \_\_\_\_\_

7. How did you solve these problems? \_\_\_\_\_

#### I. Extension Services

1. Did you have any contact with extension agents in 2009 E.C in relation to honey production?

1. Yes 2. No

2. If yes, on average how many days did the extension agents contacted (visited) you.

1. Once per month 2. Twice per month 3. Three times per month 4. four times per month

3. If yes, what type of extension services did you get in relation to honey?

1. Product Marketing 2. Use of improved hive 3. Product storage 4. Product

Processing 5. Other (specify) \_\_\_\_\_

4. Have you ever attended any field demonstration day arranged by extension agents about Honey Production? 1. Yes 2. No

5. Who provides the advisory service? (√) (Multiple responses is possible)

1.  Development agents 2. Woreda OoARD experts 3.  Research centers (specify) 4.

NGOs (specify) \_\_\_\_\_ 5. Neighbors and friends 6.  Others (specify)

#### J. Marketing Channels

1. How did you sell your honey and wax product?

1. By supplying to the market 2. Selling at a farm 3. Both

2. If you sell by supplying to the market to which market did you supply?

1. To local markets 2. To word's, market 3. To Zonal market,
3. To whom did you sell honey in 2009? 1) Farmer traders 2) Retailers 3) Wholesalers
- 4) Consumers 5) Processors /Tej maker/ 6) Cooperatives/union 8) Others\_\_\_\_\_
4. Would you rank your buyers in terms of quantity they purchased?

NO	Buyers	Their rank
1	Farmer traders	
2	Whole Sellers	
3	Retailers	
4	Consumers	
5	Cooperatives / union	
6	Processors	

5. What did you have done to higher your product price? 1) Packaging 2) Sorting
- 3) Filtering 4.Others specify \_\_\_\_\_
6. If you pack the product what is your packaging material? 1) Plastic box 2) Plastic sack 3) Pot 4) other specify\_\_\_\_\_
8. Is there any buyer group, which recommends to how to modify your production and Market? Supply system? 1) Yes 2) No
9. If the answer for question number 8 is yes, who gives you information and recommendation? 1) Farmer traders 2) Retailers 3) Wholesalers 4) Consumers 5) Processors 6) Cooperatives in Gomma 7) union 8) others\_\_\_\_\_

#### K. Marketing margin

1. Honey sales during 2009

No.	Type of sale	Volume sold	Unit of sale	Number of sold	Per kg.	Total revenue
1	Crude					
2	Filtered					

L.Constraints and opportunities

1. Have you faced any constraint/challenge since you started honey producing? A. Yes B.No  
2.What is the Major constraints of honey production you encountered. Rank horizontally (1= most severe, 2= second severe and 3= moderate)

Constraints	(1= most severe , 2= second severe and 3= moderate)	What measure will take
Lack of market		
Low price of product		
Lack of storage		
Lack of transport		
Lack of market information		
Poor linkage with value chain actors		
Low quality of product		
Low consumer demand		
High market distance		
Others (specify)		

4. Do you think that there are possible solutions to eliminate/adapt/reduce these constraints?

1. Yes 2. No

5. If yes, what are the possible solutions in your opinion?

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B.Opportunities of honey production in your area (multiple answer is possible)

Presence of huge number of bee colonies	High demand for local honey from honey traders and consumers	Closeness of the area to big city and towns	Presence of good government policy

If any other \_\_\_\_\_

## Appendix C Cooperatives / union/ Questioner

### Demography

1. Woreda\_\_\_\_\_
2. Name of the cooperative \_\_\_\_\_
3. Age of the cooperative\_\_\_\_\_
4. Total members of the cooperative\_\_\_\_\_

### A/Purchase practice

1. How did you buy honey and wax product 1. From farm 2.from market
2. How the honey is supplied to you 1) crude honey without sorting 2) crude honey sorted with Color 3) manually filtered honey 4) filtered honey with machine 5) other
- 3) How did you attract your suppliers? 1) By weighing fairly 2) By giving better price
- 3) Others (specify). \_\_\_\_\_
4. How many regular suppliers do you have in 2009? 1) Producer \_\_\_ 2) Rural assembler\_\_ 3) Processors \_\_\_\_\_ 4) Wholesalers \_\_\_\_\_ 5) Retailers \_\_\_\_\_
5. For which group you provide a recommendation. 1) Producer 2) Rural assembler
- 3) Processors 4) Wholesalers5) Retailer
6. What recommendation did you give for your suppliers? \_\_\_\_\_
7. is there any activities your buyers did for a better relationship 1) giving Credit service 2) Supplying input 3) other
8. To which market and to whom did you sell honey in 2009

Purchased from Market(Location name)	Purchased from	Way of purchase (Value addition)	Quantity purchased on market day (KG)	No. of Market day/week	Average price per kg
Where 1. _____ 2. _____ – 3. _____ – 4. _____	1. Farmers 2. Retailers 3. Wholesaler 4. ruralassem bler 5. You don't Know	1. crude. sorted by color 2. White. sorted by color black 3. filtered manually 4. filtered by machine			

### B. Selling practices

1. To whom you sell your product 1) *tej* brewers 2) Processors 3) Wholesalers 4) Retailers  
5) Consumers

2. To which market you sell the product 1) local market 2) Aggaro market  
3) Jimma market 4) Addis Ababa 3) others
3. How many regular buyers do you have in 2009? 1) Processors \_\_\_\_2).Wholesalers  
3) Retailers \_\_\_\_4) consumers
4. How you sell honey to your buyer  
1) Crude honey without sorting 2) crude honey Sorted with color 3) manually filtered  
Honey 4) Filtered honey with machine 5) other
5. What is your packaging material? 1) Plastic box 2) Plastic sack 3) pot
6. What is your source of information? 1) TV 2) Radio 3) Other traders 4) Personal  
Observation 5) other (specify) \_\_\_\_\_
7. How did you attract your buyers? 1) By weighing fairly 2) By giving better price 3) by  
credit  
sell 4) By visiting those 5) others (specify). \_\_\_\_\_
8. Is there any buyer group who gives a recommendation? 1) Processors 2) Wholesalers 3)  
Retailers 4) consumers 5) cooperatives
9. What recommendation did they give? \_\_\_\_\_
10. Is there any activities your buyers did for a better relationship? 1).Giving credit service 2)  
Supplying input 3) market information
11. To which market and to whom did you sell honey in 2009?

Sold Mar- ket(Location name)	Sold to	Way of sell (Value addition)	Quantity Sold on market day (KG)	No. of Market day/week	Average price per kg
Where 1. _____ 2. _____ 3. _____ 4. _____	1. Farmers 2. Retailers 3. Wholesaler 4.ruralassembler 5. You don't Know	1.crude sorted by color 2.white sorted by color black 3.filtered manually 4.filtered by machine			

### C.Constraints/Opportunities

1. Have you faced any constraint/challenge since you started honey marketing?  
A. Yes B. No
2. If yes, what major constraints/ challenges you were facing? \_\_\_\_\_
3. What are the Major constraints of honey production you encountered? Rank them (1=  
most severe, 2= second severe and 3= moderate)

Constraints	(1= most sever 2= second severe and 3= moderate)
High purchasing cost	
Lack of market	
Low supply	
Low price of product	
Lack of storage	
Lack of transport	
Lack of market information	
Poor linkage with value chain actors	
Low quality of product	
Low consumer demand	
High market distance	
Others (specify)	

4. Do you think that there are possible solutions to eliminate/adapt/reduce these constraints?

1. Yes 2. No

5. If yes, what are the possible solutions in your opinion?

\_\_\_\_\_

6. What is the opportunity in honey marketing in your area?

1. \_\_\_\_\_

2. \_\_\_\_\_

Name of enumerator \_\_\_\_\_ data \_\_\_\_\_ signature \_\_\_\_\_



**C. Traders interview schedule**

Area information

- 1. *Woreda*----- Name of Market-
- 2. Distance from residence to the market-----Km /walking time in minutes

Demography

- 1. Code of the trader \_\_\_\_\_
- 2. Age \_\_\_\_\_
- 3. Sex\_\_\_\_\_
- 4. Type of trade: (√) 1. [ ] Retailer 2.[ ] Whole seller 3.[ ] Collectors 4. [ ] Others
- 5. Marital status (√) 1.[ ] Single 2. [ ] Married 3. [ ] Divorced 4. [ ] widowed /er
- 6. Family size: Male\_\_\_\_\_ Female\_\_\_\_\_ Total\_\_\_\_\_
- 7. Educational level of the respondent\_\_\_\_\_
- 8. Position of respondent in the business (√): 1. [ ] Owner- manager 2. [ ] Spouse of owner  
3. [ ] Employed manager 4. [ ] Daughter of the owner 5.[ ] Son of the owner  
6. [ ] Relative to the owner 7. [ ] Other (specify)
- 9. Religion of trader 1.protestant 2. Orthodox 3.Muslim 4.catholic 5.Other (Specify)
- 10. How long have you been operating the business? \_\_\_\_\_years
- 11. Did you trade alone or in partnership? (√);1. [ ] Alone 2. [ ] Partnership
- 12. Do you participate in honey trading year round? (√); 1. [ ] Yes 2. [ ] No
- 13. If your answer to Q.12 is No, at what period of the year do you participate? (√) 1. [ ]  
When purchase price becomes low 2. [ ] During high supply 3. [ ] Other (specify)
- 14. Number of market days in a week? \_\_\_\_\_
- 15. What was the amount of your initial working capital when you start this honey business  
\_\_\_\_\_ Birr?
- 16. What is the amount of your current working capital \_\_\_\_\_ Birr?

Purchased from Market (Location name)	Purchased from	Way of purchase(Value addition)	Quantity purchased on market day (KG)	No. of Market day/w week	Average price per kg
Where 1. _____ 2. _____ 3. _____ 4. _____	1. Farmers 2. Retailers 3. Wholesaler 4.ruralassembler 5. You don't Know	1.crude sorted by color white 2. sorted by color black 3.filtered manually 4.filtered by machine			

- 17. What is your source of working capital? (√); 1. [ ] Own 2. [ ] Loan 3.[ ] Gift 4. [ ]  
Share 5. [ ] Others (specify)

18. If it was loan, from whom did you borrow? (√); 1.  Relative/family 2.  Private money lenders. 3.  NGO (specify) 4.  Friend 5.  Other traders 6.  Microfinance in Situation 7.  Bank 8.  Others

ii) Purchase practices

1. How did you buy honey and wax product 1. From farm 2. from market
2. How the honey is supplied to you 1. Crude honey without sorting 2. crude honey sorted with color 3. manually filtered honey 4. Filtered honey with machine 5. other
- 3) How did you attract your suppliers?
  1. Weighing fairly 2. By giving better price 3. Others (specify)
4. How many regular suppliers do you have in 2009? 1. Producer \_\_\_\_ 2. Rural assembler \_\_\_\_
  3. Processors \_\_\_\_ 4. Wholesalers \_\_\_\_ 5. Retailers \_\_\_\_
5. For which group you provide a recommendation. 1. Producer 2. Rural assembler
  3. Processors 4. Wholesalers 5. Retailer
6. What recommendation did you give for your suppliers?  
\_\_\_\_\_

7. Is there any activities your buyers did for a better relationship?

1. Giving Credit service 2. Supplying input 3. Other

8. To which market and to whom did you sell honey in 2009

iii. Selling practices

1. To whom you sell your product 1. *tej* brewers 2. Processors 3. Wholesalers 4. Retailers
  5. cooperatives 6. union 7 Consumers
2. To which market you sell the product 1. Local market 2. Aggaro market
  3. Jimma market 4. Addis Ababa 5. Others
3. How many regular buyers do you have in 2008? 1) Processors \_\_\_\_ 2) Wholesalers \_\_\_\_
  - 3) Retailers \_\_\_\_ 4) consumers
4. How you sell honey to your buy
  1. Crude honey without sorting 2. Crude honey Sorted with color 3. Manually filtered honey 4. Filtered honey with machine 5. Other
5. What is your packaging material? 1. Plastic box 2. Plastic sack 3. Pot
6. What is your source of information? 1. TV 2. Radio 3. Other traders 4. Personal observation
5. Other (specify)
7. How did you attract your buyers?
  1. *1. By weighing fairly 2) By giving better price 3) by credit sell 4) by visiting them 5) Others (Specify).* \_\_\_\_\_
8. Is there any buyer group who gives a recommendation? 1) Processors 2) Wholesalers
  - 3) Retailers 4) consumers 5) cooperatives
- 9) What recommendation did they give? \_\_\_\_\_
10. Is there any activities your buyers did for a better relationship 1) giving credit service 2)
  - Supplying input 3) market information
11. To which market and to whom did you sell honey in 2009?

sold Market (Location name)	Sold to	Way of sell (Value addition)	Quantity Sold on market day (KG)	No. of Market day/week	Average price per kg
Where 1. _____ 2. _____ 3. _____ 4. _____	1. Farmers 2. Retailers 3. Wholesaler 4. rural assembler 5. You don't Know	1. crude sorted by col- or white 2 sorted by color black 3. filtered manually 4. filtered by machine			

### C. Constraints /Opportunities

1. Have you faced any constraint/challenge since you started honey marketing? A. Yes B. No
2. If yes, 2. What are the Major constraints of honey production you encountered? Rank them (1= most severe, 2= second severe and 3= moderate)

Constraints	(1= most severe, 2= second severe and 3= moderate)	What measure will take
High purchasing cost		
Lack of market		
Low supply		
Low price of product		
Lack of storage		
Lack of transport		
Lack of market information		
Poor linkage with value chain actors		
Low quality of product		
Low consumer demand		
High market distance		
Others (specify)		

4. Do you think that there are possible solutions to eliminate/adapt/reduce these constraints?  
1. Yes 2. No

5. If yes, what are the possible solutions in your opinion?

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6. What is the opportunity in honey marketing in your area?

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*Thank you very much for responding the questioner*

## D. Consumers Interview Schedule

### I. General Information

1. Name of Respondent: \_\_\_\_\_
2. Zone \_\_\_\_\_; District \_\_\_\_\_; Kebele \_\_\_\_\_; Village \_\_\_\_\_
3. Sex; 1=Male 2=Female
4. Marital status 1=single 2= Married 3= Divorced 4= widowed (widower)
5. Age of respondent \_\_\_\_\_
6. Education;
7. Religion; 1= Muslim 2=Protestant 3=Catholic 4= Orthodox 5=others(specify) \_\_\_\_\_
8. Means of income; 1= Farming 2= Trade 3=Employment 4=others (specify) \_\_\_\_\_
9. Source of honey 1=Own produce 2=purchase
10. Proportion of your income spent on honey purchase \_\_\_\_\_
11. Distance from nearest town (walking minutes) \_\_\_\_\_
12. Income earn per monthly \_\_\_\_\_
13. Experience in honey consumption \_\_\_\_\_
14. Total family size \_\_\_\_\_
15. The way you got honey \_\_\_\_\_
16. Linkage with commercial honey value chain actors: (√) (Multiple responses are possible) 1. [ ] Rural collectors 2. [ ] Farmers 3. [ ] Retailers 4. [ ] Wholesalers 5. Others (specify) \_\_\_\_\_
17. Do you think honey value chain is complex and many intermediaries?  
1. [ ] Yes 2. [ ] No
18. Do you think traders of honey marketing are efficient and competitive? (√)  
1. [ ] Yes 2. [ ] No
19. If your answer for Q.18 is No, what is the problem of traders? (√) 1. [ ] High competition with unlicensed traders 2. [ ] Supply poor quality 3. [ ] Cheat scaling weighting 4. [ ] Price setting problem 5. [ ] Government policy problem 6. Others (specify) \_\_\_\_\_

### II. Purchase of Honey

1. As a buyer, do you have difficulty in obtaining sufficient supplies? (√)  
1. [ ] Yes 2. [ ] No
2. As a buyer, do you have a particular seller? (√) 1. [ ] Yes 2. [ ] No
3. Do you consider any quality requirements to purchase honey? (√) 1. [ ] Yes 2. [ ] No
4. If yes for Q.3, what quality requirement do you consider?
5. Do you know the benefits of consuming honey product? (√) 1. [ ] Yes 2. [ ] No
6. What should be done to increase honey product consumption? \_\_\_\_\_
7. Do you think that the price of honey reduced if the value chain actor's linkage is improved? (√) 1. [ ] Yes 2. [ ] No.
8. If your answer for Q.7 is No, why? \_\_\_\_\_
9. If your answer for Q.7 is yes, where intervention should is needed \_\_\_\_\_

Thank You/