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Research Article

HONEY VALUE CHAIN ANALYSIS: THE CASE OF ABUNA GINDEBERET DISTRICT OF OROMIA REGIONAL STATE, ETHIOPIA

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ABSTRACT

Annual honey production in Ethiopia was large by African standard. However, its limited value addition activities and poor collaboration between chain actors affect the entire chain. This study was conducted in Abuna Gindeberet district to map honey value chain, identify existing market channel and role of actors across the chain. Both primary and secondary (published and unpublished sources) data were collected. Totally 150 honey producer were selected using pre-tested structured questionnaire; and key informant interview for Traders and consumers; and focus group discussion used. Data were analyzed using descriptive and inferential statistics, aspects of value chain and STATA. Major honey actors include input suppliers, producers, collectors, wholesalers, processors, and consumers. Wholesalers are the main honey value chain governor and producer position in price negotiation and product quality definition is not good. Among producers 7.33% and 65.33% conduct upgrading using honey extractor and storing, respectively. Six market channels were identified and channel was the largest (volume) and channel IV is the longest. Thus, it was highly recommended to improve the inter-linkage to improve whole honey value chain actors and market channel from production to consumption.

Keywords: Honey stakeholders, Market channel, Role of actors, Value chain analysis.

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INTRODUCTION

Ethiopia is among the major producer of honey both in Africa and in the world. It has a longer tradition of beekeeping than other countries during time of king Ezana, around 3rd century AD, and as a result of its forests and woodlands (Workneh, 2011). Beekeeping requires little land and, therefore, is an ideal activity for small scale resource-poor farmers (Arage *et al*., 2018). It is valued environment friendly agricultural activity. It produces mainly natural honey and its associated by-products-Beeswax, royal jelly, and pollen. However, according to Central Statistics Authority (CSA) (2017), the Ethiopia total honey production is about 47.71 million kg of which the greater portion of honey (90%) is harvested from traditional hives; where about 95% of hives are traditional.

Value chain is useful as poverty leads to increase on and off farm income. Value chain is the linked groups of people and processes by which honey is supplied to final consumer with a flow of information between the people. Increased agricultural productivity alone is not a sufficient route out of poverty within the context of globalization. A focus on post differentiated value added products and increasing links would appear to be the strategies open to smallholders honey producers. Value Chain Analysis (VCA) is not only about the activities a firm operates but also takes into consideration governance and its effects on actors' activities and upgrading value chain comprise all efforts to improve inefficiencies (Nugraha, 2007). Upgrading honey VC improves bee products along every step of production, harvesting, processing, and distribution focus on interventions enhancing capacity of participants (Jakpa, 2016).

According to Aravindakshan *et al*. (2011), beekeepers (small scale farmers), local honey collectors, cooperatives, tej houses, wholesalers, honey and beeswax processors, retailers, input suppliers, and exporters are the major actors in the apiculture sub-sector. However, Kassa *et al*. (2018) studied revealed that honey value chain actors include producers, cooperatives, collectors, retailers, wholesalers, processors, and consumers and seven market channels identified. In addition, Ayantu (2018) study shows that input suppliers, producers, rural collectors, retailers, wholesalers, processors, and consumers were honey value chain actors identified nine market channels identified.

Annual production of honey and beeswax in Ethiopia was large by African standard. Major producing regions in Ethiopia are Oromia (48.4%), Amhara (23.25%), SNNPR (17.45%), and Tigray (4.64%) and also total of about 6.19 million hives is estimated to be found in the rural sedentary areas of the country from which 95.37% traditional, 1.31% transitional, and 3.33% modern beehives. From Oromia regional state Illubabor (16.45%), West Wellega (13.19%), Jimma (11.99%), and West Shewa (8.42%) ranks from 1 to 4 by number of hives and also in honey production West Shewa ranks 3rd by producing 10.19% of honey following Illubabor 16.02% and Jimma 10.32% (CSA, 2017).

Abuna Gindeberet district is among high potential honey producer from west shewa zone. As indicated in the report of West Shewa Livestock and Fishery Development Office (WSLFDO, 2018), from the total honey produced (2,231,266 kg) in the production year, the district ranks 3rd by producing 7.39% next to Danno (11.03%) and Dandi (8%). According to the report of Abuna Gindeberet District Livestock and Fishery Development Office (AGDLFDO, 2018) (unpublished observations) in the district of rural *kebeles*, farmers have been using honey since long time ago even though the system is traditional. The district has 14,569 honeybee colony in which; 299 modern hives, 1114 transitional hives, and 13,156 traditional hives with late October to beginning of December peak honey production and harvesting season. Thus, basing on the theory of VCA, this study mainly focused on identifying existing market channel, mapping honey value chain, and identify role of actors across the chain in Abuna gindeberet district using sample respondents.

METHODS

Description of the study area

This study was conducted in Abuna Gindeberet district of West shewa zone, Oromia regional state, Ethiopia. The district is located at about 170 km from West of Addis Ababa and 128 km from zonal town Ambo. It is characterized as midland (32%) and lowland (68%)

which is about 13 midland and 28 lowland *kebeles*. The district has a total of 44 *kebeles* with total population of 181,853, where 49.93% were male and 50.07 were female. Beekeeping practiced with about 14,569 honey bee colony where about 299 Modern hive, 1114 Transitional hive, and 13,156 Traditional hives in the district (AGDLFDO, 2018). The district is suitable for honey production due to its favorable agroecology and beekeeping activities as it houses for bee forage. Honey production is commonly practiced during two production cycles in the district, but more intensively used among the two production cycles in which more of the farmers are engaged for honey production that is from September up to November (first season) that is during flowering season. The second season runs from April to May and peak honey harvesting months is at the end of October and beginning of November.

Types of data, source of data, and sample size determination

Qualitative and quantitative data were used for interpretation of the study result. Both primary and secondary source of data were conducted using survey questionnaires, where primary data were collected from sampled households, Key informant interview, focus group discussion (FGD), traders, and consumers. Secondary data were collected from Abuna Gindeberet district offices and NGOs working on honey in the district as well as different published and unpublished sources and websites. The *kebeles* were classified in to midland and lowland agro ecology because the district has about 13 midland and 28 lowland *kebeles* and all *kebeles* were honey producers. A three-stage sampling technique was employed for this study. First, two *kebeles* from each agro ecology selected randomly, namely, Goro jalate and Kolu from lowland and Yagot and Irjajo from midland. Second, honey producers and non-producers identified and third sampled households were randomly selected from honey producers using probability proportional to sample size (Table 1).

In calculating sample size, if there is no previous related work, pilot survey was recommended and would provide necessary information to fix the value of P (proportion of the population). However, for this study, the researcher could not carryout pilot survey due to budget and time constraint. Thus, the following assumption is used regarding the value of p. When calculating sample size for proportion, there are two situations to consider. First, if some approximation of p is known (example, from a previous study), that value can be used in the formula. Second, if no approximation of p is known, one should use p=0.5. Therefore, due to heterogeneity of the population (midland and lowland), the sample size would be determined using the formula developed by Cochran's (1997) and the value of p was taken as 0.5. Hence, depending on the information from the district, the sample size was 150 that would be determined from four randomly selected *kebeles.* The number of honey producer household was 536, where 282 and 254 households were from midland and lowland *kebeles,* respectively. The formula for sample size determination for heterogeneous population is given by Cochran's (1997).

$$n = \frac{pq(Z)^2}{e^2} \quad (1)$$

Where n = sample size; p=0.5; q=1-p; and e = (8%) allowable error. Z = value of standard variate at a given confidence level and worked from table showing area under normal curve is 95% zα/2=1.96.

$$n = \frac{0.5 * 0.5(1.96)^2}{0.08^2} = 150$$

Regarding honey wholesalers, collectors, and consumers, there were about 13 licensed honey wholesaler and different unlicensed collectors that participate on honey marketing in the district. Total licensed wholesalers were taken from different market. About 12 collectors were selected by random sampling from market at market day because they are mostly seasonal to collect honey when peak production and about ten consumers were selected randomly.

Method of data collection and analysis

The primary data were collected using structured questionnaire from sampled households, and also from key informant interview, FGD, traders, and consumers using checklists. Enumerators who are working in the selected *kebeles* as development agents (DAs) would be selected and trained on the techniques of data collection and the questionnaire were pre-tested to evaluate the appropriateness, simplicity, understanding, and relevance of the questions. Key informant interview were conducted using selected eight (8) experts of the district (one from district livestock and fishery office, four from DAs, two from NGO social workers, and one from district Trade and Market Development Office). 8–12 member of FGD were held in selected *kebeles* to collect the relevant data for the study. Collected data were coded and feeding to Microsoft Excels 2010 and grouped for analysis depending on the type of variable and information obtained. Descriptive statistics, inferential statistics, aspects of VCA, and STATA version 14 were used to analysis the data.

RESULTS AND DISCUSSION

Characteristics of sampled producers

According to Table 2 below, mean of the family size of sampled household in adult equivalent was 7.30 in midland and 5.54 in lowland agroecology. Since honey is not labor intensive agricultural activity, the large number of family size is not as much important because it increases the level of consumption at home. The t-test results showed that household size was statistically significant at 10% significant level, meaning that, the household size between lowland and midland agroecology was not equal. In case of distance to the nearest market, the average distance producers traveled to the nearest market was about 1.12 h and 1.89 h for midland and lowland agroecology, respectively, with an average of 1.49 walking hour per trip. This creates variation among sampled households to purchase inputs and to sell their produce at the required period of time and at affordable prices. The t-value inferred that there were significant differences in distance traveled at 10% level of significance. This depicts that, there is a difference in walking hour for agroecology in honey marketing.

The average educational status of sampled producer was 5 years of schooling approximately with an average of 6 and 4 years of schooling for midland and lowland, respectively. The result of two tail t-test shows that education level was statistically significant at 10% level of significance. This implies that there was a significant difference in educational status of low land and midland agroecology. In other case, the numbers of honeybee colonies owned by sampled producers were on average 6.22 and 9.37 in midland and lowland, respectively. This implies that there were household those having a large number of colony to produce ample volume of honey for marketing as well as for his/her economic growth. The result of the two tail t-test shows that the number of colonies owned was statistically significant in between the two agro ecology at a 5% level of significance. This infers that there is a significant difference between agroecology for owning number of beehives.

Regarding types of beehives owned, 71.33% of sampled household owned only traditional hives with 30% from midland and 41.33% from

Table 1: Sample distribution of honey producers in selected kebeles

S. No.	Kebeles	Total number of honey producers	Number of sampled producers
1	Irjajo	167	47
2	Goro Jalate	119	33
3	Kolu	135	38
4	Yagot	115	32
Total		536	150

Source: Own computation, from district livestock and fishery development office 2019

lowland agroecology. About 8.67% of sampled household had both traditional and modern hives. However, 13.33% of midland and 3.33% of lowland with a total of 16.67% sampled household owned all types of beehive that means traditional hive, transitional hive, and modern hives in one. According to Table 2 below result, the types of beehives owned were statistically significant on the Chi-squared results at 1%. This infers that there was a significant difference in having different type's beehives in one between midland and lowland.

Honey VCA

Honey value chain main actors

Input suppliers

These are the first actors in honey value chain. Honey production equipment inputs particularly honey extractor, personal protective, modern hives, and hive frames were supplied by NGOs (*mention for mention*) to farmers in the study area. The government institution such as district Livestock and fishery development offices and NGOs with the common objective of honey product maximization through the provision of modern beekeeping inputs. According to FGD and key informant interview, the organization (NGO) provides training and free extension services with the help of expert's and developmental agents. NGO is the only source of input in the study area for honey production either than its own made. About 16.67% of sampled producers owned modern hive with 6% of honey extractor where all are supplied by NGO (Table 3). However, 28% of producers owned transitional hive in which 12.67%, 11.33%, and 4% from NGO, self-buying and from both buying, and NGO, respectively. In addition, almost all producer owned traditional hive and PP (personnel protective cloths), but 24.67% of producers had got PP from NGO. This infers those having modern hive by the help of NGOs can be supplied with honey extractor by group.

Table 4 below revealed that using traditional hive and cloth (PP) was one of the most important honey production equipment in the study area. Almost all sample respondents use traditional hive and protective clothes to produce honey. Using modern hive and honey extractor has several advantages beside production increment, but only 13.33% and 3.33% of honey producing sample respondents of midland and lowland have a modern hive, respectively. There is a significant difference between agro ecology on the uses of modern hive at 5% significance level. In addition, there are about 6% of producers owned honey extractor in midland and null in lowland at 5% significance level. This may be due to lack of transport facility and distance from the main road and others for lowland.

Producers

They are the first link in the marketing channel and the second actors in the value chain. They are the major actors who perform most of the value chain function from farm inputs preparation to post-harvest handling and marketing. Their major activities were site preparation, protecting hives from predators, feed provision in dearth period, filtering, transporting, harvesting, and post-harvest handling. Most of honey producers sell their honey to different buyers involved at the farm gate, village, or district market center.

Honey collector

They are actors who bought honey directly from smallholder producers at the farm gate and local markets. They add value to honey by collecting from distant location to make it easily available to the market and sell directly to wholesalers. However, those are illegal traders (collectors) who do not have a license in the study area for honey marketing. Table 5 below depict that, all sampled collectors are male where 5.33 was their average family size. The respondents also asked from where they got capital to take part in honey marketing, among the respondents 58.33% are self-budgeting, while 16.67% is by credit from their wholesalers and about 25% of respondent uses both self-budgeting and credit at market day or week payment for wholesalers. This is due to the difference between the capacities of collectors having the capital for honey marketing. The average honey marketed year round per collector is 749.58 kg by an average capital of 10,666.7ETB. Price decision to buy honey is decided by collectors depending on the price wholesalers received from them, whereas the price is determined by buyer (wholesaler) to sell honey.

Wholesalers of the district

These are mainly involved in purchasing honey from collectors and producers in larger volumes than any other actor. They have accounted for the biggest purchased volume of the channel members' about 5607 kg of honey marketed and resell their honey by transporting to wholesalers in Addis Ababa (AA). They have better capacities in terms of finance, market information, and other facilities and also have an

Table 2: Mean and proportion of household characteristics by agroecology

Variables	Category	Midland (n=79)	Lowland (n=71)	Both (n=150)	t-/χ^2 value
Sex of the household head	Male	71 (47.33)	65 (43.33)	136 (90.67)	0.1241
	Female	8 (5.33)	6 (4.00)	14 (9.33)	
Family size (man equivalent)		7.30	5.54	6.47	−4.154*
Education of household head		5.62	4.03	4.87	−3.112*
Distance from nearest market		1.12	1.89	1.49	5.625*
Number of beehives owned		6.22	9.37	7.71	2.5678**
Volume of honey supply		66.84	79.45	72.81	0.8781
Types of beehives owned	Traditional hive	45 (30.00)	62 (41.33)	107 (71.33)	17.76 ***
	Traditional and transitional	3 (2.00)	2 (1.33)	5 (3.33)	
	Traditional and modern	11 (7.33)	2 (1.33)	13 (8.67)	
	All (all hive types in one)	20 (13.33)	5 (3.33)	25 (16.67)	

Source: Computed from survey data, 2019

Table 3: Type of inputs, sources, and mode of payments

Variable	Inputs	Owned from sampled (%)	Sources of input (%)			Mode of payment	
			NGO	Self	Both	Cash (%)	Own made
Bee hive types	Modern hive	16.67	16.67	-	-	100	-
	Transitional hive	28	12.67	11.33	4	100	-
	Traditional hive	100	-	100	-	-	100
Equip-ment	Honey extractor	6	6	-	-	100	-
	Cloths (PP)	100	24.67	75.33	-	24.67	75.33

Source: Own computation from survey result, 2019

intimate relationship with their supplier particularly with the collector. Sometimes, some wholesalers give money by advance payment for some collectors in the morning on the market day to collect for them. Average educational statuses of district wholesaler were 7.69 which imply that almost all wholesalers are educated personnel and the average experience in honey marketing were 6.15 years.

Source of capital was other factor affecting the capacity of wholesalers. Among the respondents 61.54% are self-budgeting, while about 38.46% uses both self-budgeting and credit from AA wholesalers. According to wholesaler respond, the average honey marketed year round per wholesaler was 4,908.46 kg by an average capital of 73,846.15ETB. The price decision to buy honey was by him depending on the price the AA wholesaler received from them, whereas the price is determined by the buyer (AA wholesaler) to sell honey (Table 6).

Wholesalers of Addis Ababa (AA)

These are mainly involved in purchasing honey from district wholesalers. Almost all wholesalers have a warehouse for honey storage. They have better capacities in terms of finance, storage capacity, market information, and other facilities. These wholesalers have an intimate relationship with their district supplier who brings a bulk of honey for them from a different district and also with the processor (tej makers, cosmetics, and others) in AA. After receiving honey from district wholesaler, they store at their warehouse and resale to processors and consumers.

Processors

These are actors who purchase crude honey from beekeepers and wholesalers then supply processed honey to global consumers by packing and giving brand name while others sell to local consumers in the form of brewery locally known as *birth* and *keneto/tenaye* and for home consumption. Processors involvement in the chain includes buying of honey produced and then processing. The other processors are AA processors who bought honey from AA wholesalers and sales after processing in to either *tej* and other output (cosmetics and others that use honey as input).

Table 4: Input uses by agroecology

Input uses	Proportion (%)			χ^2 value
	Midland	Lowland	Both	
Modern hive	13.33	3.33	16.67	8.9909**
Transitional hive	22.67	5.33	28	18.7218***
Traditional hive	52.67	47.33	100	-
Honey extractor	6	0.00	6	8.6049**
Cloths (PP)	52.67	47.33	100	-

and * is statistically significant at 1% and 5% significance level. Source: Own computation from survey result, 2019

Consumers

There are two types of consumer. These are local consumers who buy processed or crude honey directly from producers and processors in the study area and also include local communities those who consume "*keneto/tenaye"* and *"birth."* Second, those buying honey from AA wholesalers for consumption and processes into different products to supply for consumer as well as for home consumption. Consumer average education level was 10 years of schooling and almost all consumer used honey by making local drink (*birth* or *tenay/keneto)* (Table 7).

Honey supporting actors

Are the main honey value chain supporters who facilitate performance of the major value chain actors in the study area. They offer services such as extension, information, and financial services. Accordingly, Oromia credit and saving institution, district livestock and fishery development office, DAs, district administrations, informal credit providers, and NGOs are the major honey value chain supporters in the district. They give advice how to use modern hives to improve quality and quantity of honey produced and also to sell their product in mass to high value markets.

Honey value chain influencers

Influencers are government policies and regulators influencing the chain actors such as the ministry of trade and commerce and in particular district administration and district trade and development office. These include access to finance, commercial registration and business licenses, grades and standards, access to investment areas reserved, and access to basic infrastructure. They influence the performance of the subsectors, actors, and supporters.

Honey value chain map

Value chain mapping supports to visualize the flow of the product from beginning to the ultimate consumer through various actors. The value chain map highlighted the involvement of diverse actors who are participated directly or indirectly in the value chain. Chain mapping is the core of VCA as it reduces the complexity of economic reality with its diverse functions, multiple stakeholders, interdependencies, and relationships to a comprehensible visual model (Zander, 2015). In this study, helps to identify the different actors involved in the honey value chain and to understand their roles and relationships along the chain. Accordingly, the current honey value chain map of the district is indicated, and actors involved in the chain are interconnected with main channels in which honey flows to reach the consumers are mapped in Fig. 1 below.

Honey value chain upgrading

Upgrading may be measured by productivity or performance of firms. Moreover, upgrading may be examined at the firm, the industry, and the country level. At the industry and country level, upgrading is defined as substantial changes in a country's specialization and knowledge

Table 5: Capital, price setting decision, and demography of collector

Variable	Min	Max	Mean (n=12)	SD
Family size	1	9	5.33	2.67
Education in years of schooling	5	10	6.83	1.64
Experience in honey marketing	1	7	3.83	2.25
Purchase/year in kg	240	1500	749.58	391.05
Capital used	5000	17000	10666.7	3694.8
	Category	**Frequency**	**Percent**	
Gender	Male	12	100	
Marital status	Married	10	83.33	
	Unmarried	2	16.67	
Source of capital	Self	7	58.33	
	Credit	2	16.67	
	Self and credit	3	25.00	
Price decision to buy	Myself	12	100	
Price decision to sale	Buyer	12	100	

Source: Own computation from survey result, 1019

Table 6: Capital, price setting decision, and demography of wholesaler

Variable	Min	Max	Mean (n=13)	SD
Family size	2	9	5.62	1.94
Education in years of schooling	3	15	7.69	3.82
Experience in honey marketing	2	20	6.15	5.16
Purchase/year in kg	1,960	10,000	4908.46	2334.62
Capital used	40,000	125,000	73846.15	26152.90
	Category	**Frequency**	**Percent**	
Gender	Male	13	100	
Marital status	Married	13	100	
Source of capital	Self	8	61.54	
	Credit	-	-	
	Self and credit	5	38.46	
Price decision to buy	Myself	13	100	
Price decision to sale	Buyer	13	100	

Source: Own computation from survey result, 1019

Table 7: Characteristics of consumer

Variable	Min	Max	Mean (n=13)	SD
Age	30	45	35.7	4.57
Family size	2	7	4.1	1.73
Education in years of schooling	5	15	10	3.34
	Category	**Frequency**	**Percent**	
Gender	Male	10	100	
Marital status	Married	10	100	
Price decision to buy honey	Seller	10	100	
Value addition	Local drink	10	100	

Source: Own computation from survey result, 1019

base that increase its capacity for value generation. At the firm level, upgrading refer to upgrading along functional activities; from low-end to higher-end value chain stages; and industrial deepening; from tangible and intangible knowledge (Ernst, 2000). Gereffi (2005) defined upgrading as shifts to move to more profitable and/or technology-intensive, capital-intensive, and skill-intensive economic niches.

According to the survey result in upgrading honey value chain, all efforts at improving honey bee products along every step of production, harvesting, processing, and distribution were focused that could enhance the capacity of chain participants. The strategies for upgrading (focusing on value addition) in the honey value chain were based on the processes involved in improving the product at every stage of the chain. The interview of KII and FGD indicated that value chain upgrading starts from product improvement. Therefore, improvement of the product is done through encouraging honey producers to use modern hives and transitional hives to upgrade production and providing training and feeding of colonies outside the blooming periods; also strengthening producers to follow regular meeting and any workshop related to honey.

Analysis of the upgrading process includes an assessment of the profitability of actors within the chain as well as information on constraints that are currently present (Jakpa 2016). During upgrading, there was value addition which increases the profitability of actors within the chain. The survey result revealed that most of the sampled producer stored honey to sale another time and others extracted by honey extractor. Doe to this the profitability of the producer increased with a minimum of 10ETB to 40ETB per kg. Traders were added value by transporting honey from low demanded to high demanded place (central markets) or from high supply to low supply of honey.

The main task of processors in this honey value chain was to add a sort of value to honey. The processors once they processed the product, they would make it available for consumers and/or purchasers. According to FGD and sampled respondents, one of the major barriers in processing the honey product was lack of honey extractor and other equipment and its high price requirements. Honey extractor is not available as much as needed in the hands of producers, because the only provider of honey extractor was NGO (*mention for mention*). Accordingly to increase production and honey upgrading, modern beekeeping technologies with full package were essential for producers.

Among sampled producers, 7.33% and 65.33% conduct upgrading (focusing on value addition) activities using honey extractor and storing, respectively (Table 8). However, about 92.67% does not have the opportunity to be the user of the honey extractor. From the survey result, about 26% of sampled honey producers do not perform any upgrading by honey extractor as well as by storing.

Table 9 below infer that 40.67% and 24.67 of sample producers conduct upgrading (value addition) of honey by storing in midland and lowland, respectively, when needed before marketing. This implies that there is a significant difference on upgrading honey between agro ecology at 5% significance level. However, this is because producers' from midland practice more upgrading activities by storing, since they sell to the market, most of the time by studying market information. Furthermore, about 6% of midland honey producers perform upgrading by honey extractor where none of lowland producers conduct. There is a significant difference on upgrading activities between agro ecology at 5% significance level; doe to honey extractor was given for midland producers only.

Honey value chain governance

The flow of honey and the level of prices were determined by dominant value chain actors. The dominant value chain actors play a facilitation role. They determine the flow of honey and the level of prices. In effect, they govern the value chain and most other chain actors subscribed to the rules set in the market. However, the governance structure in honey value chain was favorable to traders and leaves smallholders in a very weak position in the district. Honey wholesalers were the key value chain governors in the study area and have a relationship with other value chain actors such as collectors and processors especially AA processors. In most cases, the business relations between the various operational actors were free market exchange, where major source of market information was neighbors, client traders, and nearby farmers. Even if the use of cell phones, television, and radio in the rural areas is increasing, it is a rare phenomenon for farmers to receive market prices through mass media, especially honey market. Due to lack of proper market information system, improper transport facility, and minimal bargaining power, honey producers were forced to sell their product at the price offered by traders. These traders in Abuna Gindeberet district usually refer distant markets for price fixation and transport to the central market.

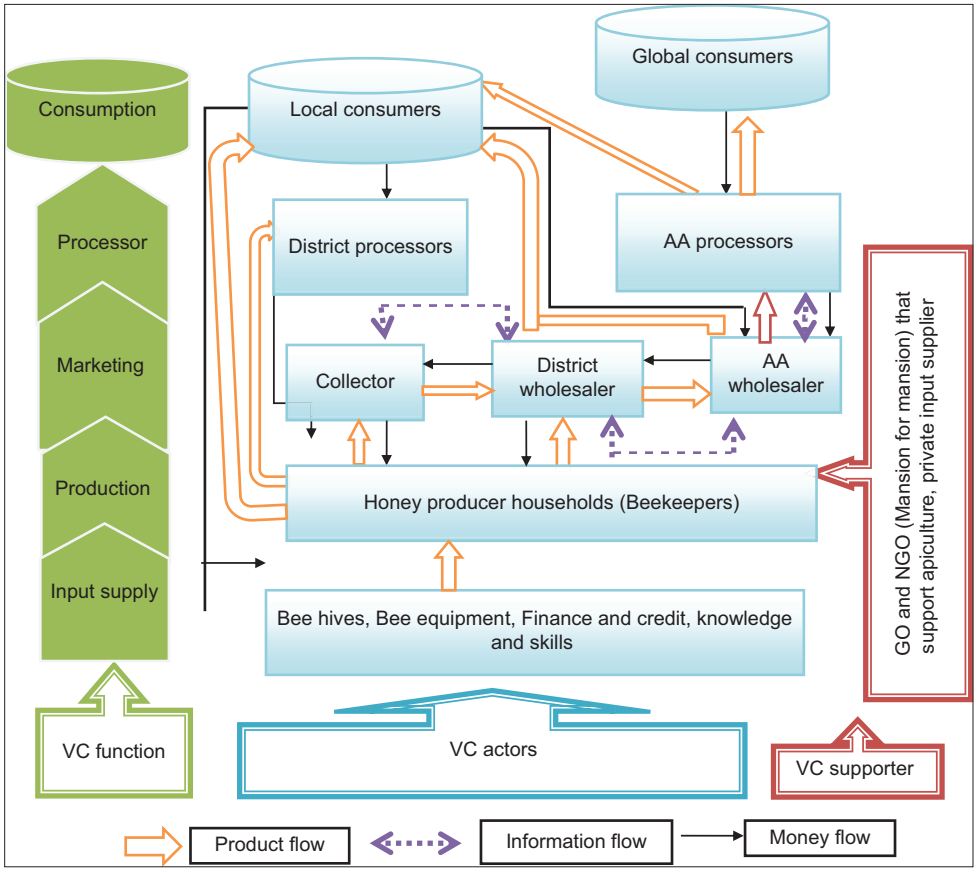

Fig. 1: Honey value chain map in the study area
Source: Own sketch from survey result, 2019

Table 8: Characteristics of sampled households in honey upgrading

Variable	Responses	Category	Frequency	%	Price increases per kg		
					Max	Min	Average
Upgrading (focusing on value addition)	Honey extractor	Yes	11	7.33	50	25	37.5
		No	139	92.67			
	Storing	Yes	98	65.33	10	30	20
		No	52	34.67			
	Not done		39	26.00			

Source: Own sketch from survey result, 2019

Table 9: Comparison of upgrading (focusing on value addition) by agroecology

Variable	Mean/proportion			χ^2 value
	Midland	Lowland	Both	
Storing	40.67	24.67	65.33	10.4036**
By honey extractor	6	0.00	6	8.6049**

**is statistically significant at 5% significance Level. Source: Own computation from survey result, 2019

According to the FGD from sampled kebeles, the coordination among value chain actors particularly producers with traders was low and also there was low knowledge sharing among the chain actors. The smallholder farmers are not organized and are not governing the value chain. Hence, they are price takers and hardly negotiate the price due to the need of money for home expenses.

Wholesalers have sufficient information about the supply of honey and in which direction flows and to be marketed in different parts of the country. Wholesalers in different markets were also well networked, but informally with collectors and AA wholesalers. For instance, honey wholesalers in Abuna Gindeberet district were networked through telephone communication with the wholesaler in the central market and district collectors. These all traders exchanged information on honey prices, local supply situation and demand on the central markets. Then, they decide the price by the agreement at which they received from each other so that the collectors and district wholesalers determine the market price by taking into account his/her profit. There was no formal collateral relation when the transaction takes place between actors except the market networking and business relation. Money is transferred through banks and often the wholesalers in the district received in cash from AA wholesaler, in other cases the collectors received at the morning on market day and distant collectors receive money to bring honey within a week (most of them). Almost all of the value chain supporters had a relationship with honey producers. Supporting actors such as governmental and non-governmental organizations were support producers through different activities and directions even if it was not enough for ample production and supply of honey.

Honey market channel

In the study district, honey producer sell their products through different channels. About six marketing channels were identified from the point of honey production until the product reaches the final consumer through different intermediaries with the proportion of honey marketed. Out of 10,921 kg of honey marketed during survey year, 3,671 kg and 4,778 kg were marketed through channel IV and channel VI, respectively, which were the dominant in terms of the volume of marketed. The survey results revealed that wholesalers and retailers were the dominants receivers from producers with a percentage share of 51.51% and 42.00%, respectively, in terms of volume of marketed, but processor and consumer received about 4.18% and 2.31%, respectively.

- Channel I: Producer→consumer: This channel is the shortest among all channels at which producers directly sell to consumers at market day or place and also the smallest in volume of honey marketed. It represented 3.31% of the total honey marketed which amounted to 252 kg of honey during the survey period.
- Channel II: Producer→processor→consumer: Rural and urban processors are buying honey from producers in the study district and they process the product into either *birth* and/or *keneto (tenaye)* to provide for consumption at home or for the market. During the survey period, it accounted for about 4.18% (456 kg) of total honey marketed in the district.
- Channel III: Producer→Collector→wholesaler→AA wholesaler→ consumer: District collector buy from producers directly and resale to district wholesalers. The district wholesaler collects from collector and transport to Addis Ababa (AA) to resale to the wholesaler of AA and the AA wholesaler resale to the consumer. It represented 8.40% (917 kg) of total honey. The channel was found to be the third important marketing channel in terms of volume market.
- Channel IV: Producer→Collector→Wholesaler→AA wholesaler→ processor→Consumer: It is the longest channel of honey marketed from the districts in which collectors buy honey to resale to wholesalers, but the second largest in the volume. The only difference between channel III and channel IV is that the AA wholesaler buys from district wholesalers and sold to the processor for processing then to the consumer. It represented 33.61 % of total honey marketed which is 3671 kg during the survey. In terms of volume honey marketed, it was the second important marketing channel.
- Channel V: Producer→Wholesaler→AA wholesaler→consumer: The only difference between the channel III and channel V is that wholesaler buys from collectors rather than from producer and AA wholesaler then to consumer. It accounted for about 846 kg (7.75%) of total honey marketed
- Channel VI: producer→wholesaler→AA wholesaler→ processor →consumer: This is the largest and the first ranked channel in terms of volume of honey marketed, by accounting 43.75% out of total honey marketed. Out of the total quantity of honey supplied to the market, it was estimated that 6.49% consumed in the district either processed and/or directly consumed and the remaining 93.51% were transported to outside the district through traders, particularly AA.

CONCLUSION AND RECOMMENDATION

The study focused on mapping honey value chain, identifying exist in market channel, and identifying the role of actors across the chain in Abuna Gindeberet district. Both qualitative and quantitative data were used to address objective and data were generated from both primary and secondary sources. The primary data were collected from a total of 193 respondents (150 producers, 25 traders, ten consumers, and eight key informant interview) using structured questionnaires and checklists and also from 8 key informant interview and FGD using checklist. Descriptive statistics, inferential statistics, and three aspects of VCA were used to analyze the data collected using STATA Software and excel sheet.

Abuna Gindeberet district is suitable for honey production due to its favorable agro ecology and availability of bee forage. Survey results revealed that total production of honey in the district was estimated to be 158,489 kg from 14,569 honey bee colonies, with late October to beginning of December peak honey production and harvesting season. As per the data collected from sampled respondents, out of 12,971 kg produced in the production year, about 84.20% of honey was marketed and the rest was consumed at home for various purposes. In addition, about six honey market channels have been identified with each channel having different volumes of honey marketed. The results showed that channel VI was the largest volume of honey marketed; however, channel IV was the second largest in volume and the longest channel of all honey market channel.

The major actors involved in honey value chain include input suppliers, producers, collectors, wholesalers, processors, and consumers. Most producers sell their products to traders while some of them sales to consumers and processors. The study results revealed that wholesalers are the main honey value chain governors. However, traders (collectors and wholesalers) do not perform any upgrading activity on honey value chain rather than transporting to the central market. The producer position in price negotiation and product quality definition is not good in the study district due to the low capability of market governance.

From the result of the finding, it is highly recommended to encourage honey value chain starting from input supply. Therefore, honey producers receive the right types of production input, quality, and quantity required at the right time, amount, and place. The role of support services such as NGOs, research institutes, and extension providers are crucial in improving production, productivity per hive and marketing of honey, and honey products to enhance honey value chain. Value chain actors should work in an integrated way to improve the production system and to create sustainable market linkage in the chain. In addition, organizing traders and producers to establish trustful and strong trade agreements between value chain actors are crucial. Since collectors operate without a license, it is suggested to advocate for licensing the functions of collectors where they will be accountable for their actions. Building their capacity on how to perform in value chain development is beneficiary. Finally, further studies on the VCA are recommended to identify best upgrading and governance practices agreed by all chain actors so that a well-organized regional and national honey value chain can be implemented.

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