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Full Length Research Paper

Value chain analysis of onion: the case of Ejere district, West Shoa zone, Oromia national regional state of Ethiopia

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This research attempted to analyze value chain of onion in Ejere district. Onion plays a significant role in increasing food security and income for the poor farmers of Ethiopia. Data for the study were collected from both primary and secondary sources. The primary data were generated by household survey using a pre-tested structured questionnaire and key informant interview using checklists. The data were collected from 85 farmers, 30 traders and 35 consumers and analyzed using STATA software. Onion value chain actors identified in the study include input suppliers, producers, rural collectors, brokers, retailers, wholesalers, processors and consumers.Producers are price takers and hardly negotiate the price due to fear of post-harvest loss, in case the product is not sold. Six market channels of onionwere identified during survey year. The highest total gross margin is 32.55% in channel II for onion.The highest gross marketing margin of producers in onion markets channels is 72.84%. Policy implications drawn from the study findings include the need to improve the input supply system,improving farmers' knowledge and experience on onion production,strengthening the linkage/interaction among onion value chain actors,expanding accessibility of market infrastructure and strengthening supportive institutions.

Keywords: Value chain analysis,Market channel,Onion,Actors, Marketing margin, Ejere.

INTRODUCTION

Agriculture is the most important sector in Ethiopia; it accounts for 46% of GDP, 80% of export value, and about 73% of employment. The sector still remains largely dominated by rain-fed subsistence farming by smallholders who cultivate an average land holding of less than a hectare. Although agriculture has a long history in the country's economy, development of the sector has been hampered by a range of constrains which include land degradation, low technological inputs, weak institutions, and lack of appropriate and effective agricultural policies and strategies (Aklilu, 2015). Vegetable production is becoming an increasingly important activity in the agricultural sector of the country following the development of irrigation and increased emphases given by the government to small scale commercial farmers. Recently, due to their high nutritional value vegetable do have ever rising demand both in local and foreign markets, and are classified among those export commodities' that generate considerable amount of foreign currency earnings to the country. As a matter of these facts commercial farms in Ethiopia used to grow vegetables over a considerable land area for years (CSA, 2015). Major vegetable types produced in West Shoa Zone are onion, potato and cabbage. Commodities that are exclusively focused on

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vegetable and fruit production by irrigation were ranked as potential intervention area in west shoa (Fanos, 2012). Onion (Allium Cepa) is the second most popular vegetable in the world following tomatoes (Lemma and Shimelis, 2003). Onion is considered as one of the most important vegetable crops produced on large scale in Ethiopia. The area under onion is increasing from time to time mainly due to its high profitability per unit area and ease of production, and the increases in small scale irrigation areas. Despite the increase in cultivated areas, the productivity of onion is much lower than other African countries and the world average. The private farmers' holdings in 'meher' season 2012/2013, the total area coverage by onion crop in the country were 21,865.4 hectare, with total production of 219,188.6 tons with average productivity of 10.02 tons per hectare (Weldemariam, *et al*, 2015). During the 2013/2014 cropping season, the total area under onion production was estimated to be 24, 375.7 hectares with an average yield of about 9.02 tons per hectare and estimated a total production of greater than 2, 19, 735.27 tons (CSA, 2014). This is very low yield compared to the world average of 19.7 tons per hectare. In spite of the policy options provided by the Ethiopian government, there are very little empirical evidence on value chain analysis of onion, to design appropriate policies for the improvement of onion production and productivity in Ethiopia. Value chain is the sequence of activities required to make a product or provide a service (Vermeulen et al., 2008). The value chain concept entails the addition of value as the product progresses from input suppliers to producers and consumers. So, this study was proposed to investigate the value chain analysis of onion produced in Ejere district. Therefore, it helps to find the weakest link of the chain and to narrow the information gap on the subject.

The general objective of this study is to analyze onion value chain in Ejere district of Oromia region with the following specific objectives:

To identify onion value chain actors, their respective roles and to draw up value chain map of in the study area.

To analyze respective marketing costs and margins across market channels

METHODOLOGY

Sampling procedure, type of data and method of data collection

The sample for this study was drawn from all actors involved along onion value chain such as producers, rural collectors, wholesalers, retailers and consumers. Three stages random sampling procedure was used for the selection of sample household heads. In the first stage, Ejere district was selected purposively based on the potential it has for onion production. In the second stage, with the consultation of District Irrigation and Development Authority experts, out of 27 kebeles of the district, 4 potential onion producers' kebeles namely Amaro, Hora, Arebsa and Kimoye were randomly selected. In the last stage, from total onion producers' in Ejere district about 85 samples of household heads were randomly selected.

Data from traders and consumers were also collected. The sites for the trader surveys were market towns in which a good sample of onion traders existed. On the basis of flow of onion, three markets (Addis Alem, Holota and Addis Ababa Piassa Atikilt Tera) were selected as, the main onion marketing sites for the study areas. Here sampling was the very difficult task due to absence of recorded list of population of traders and the opportunistic behavior of the traders. Hence a purposive sampling method was used to select wholesalers, rural collectors and retailers from specified markets. As a result, 30 onion traders were selected for the purpose of the study. Furthermore, 25 and 10 consumers were interviewed from Addis Alem and Holota, respectively, which were selected a purposively to obtain information related to consumers. Both primary and secondary data were used for this study. Secondary data sources include Ejere District Irrigation and Development Authority, Ejere District Bureaus of Agriculture, District Trade and Market Development Office and its associated primary cooperatives and Central Statistical Authority (CSA), published and unpublished reports, bulletins, and websites. Both qualitative and quantitative data were collected and used for the study.

Primary data sources were smallholder farmers, wholesalers, collectors, retailers and consumers. Primary data were collected using informal and formal surveys and key informants interviews. For informal survey Rapid Market Appraisal (RMA) technique like focus group discussion and key informant interview was used with checklists. The formal survey was undertaken through formal interviews with randomly selected farmers and purposively selected traders and consumers using a pre-tested structured questionnaire for each group. Focus group discussions were held with two groups based on predetermined checklists and a total of 15 key informants were interviewed from different organizations and institutions.

Method of data analysis

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

Table 1. Proportion of sampled households producing vegetables (in 2015 production year).

Crops type	No. of producers	Percent	Relatives importance
Onion	85	70.8	1
Potato	78	65.0	2
Cabbage	22	18.33	3
Pepper	15	12.50	4
Tomato	13	10.83	5
Sweet potato	11	9.1	6
Garlic	10	8.33	7
Carrot	6	5	8
Beetroot	4	3.33	9
Shallot	2	1.66	10

Source: Own survey results, 2015.

in the chain and assigning costs and added value to each of those activities (UNIDO, 2009).

To understand the characteristics of the chain actors of onion and the relationships exists between them, including the identification of all actors in the chain; the flow of product through the chain; the work features and the destination; information was obtained by conducting interviews, focus group discussion and by collecting secondary data from various sources. The study has employed value chain analysis which is very effective in tracing product flows, showing the physical value adding stages, qualitative and quantitative flow of product along the chain with identified key actors, their relationships with other actors in the chain and measured distribution of their benefits. This could be captured through mapping the value chain. Mapping the chain facilitates understanding of sequence of activities, key actors and relationship involved in the value chain. This analysis was undertaken in qualitative terms.

Marketing margins are also calculated at different points along the value chain and then compared with consumer price. Estimates of marketing margin are the best tools to analyses performance of market. The cost and price information used to construct marketing cost and margin have been gathered from onion value chain actors such as, producers, collectors, retailers, wholesalers and consumers. Computing the total gross marketing margin (TGMM) is always related to the final price paid by the end buyer and is expressed as percentage (Mendoza, 1995).

$$\text{TGMM} = \frac{\text{Final Consumers'Price} - \text{Producers'Price}}{\text{Final Consumers'Price}} \times 100 \quad (1)$$

where, TGMM is total gross marketing margin

It is useful to introduce here the idea of “producer participation”, “farmer’s portion” or “producer’s gross marketing margin” (GMM) which is the portion of the price paid by the end consumer that belongs to the farmer as a producer. It should be emphasized that growers that as middlemen also receive an additional marketing margin. The producer’s margin or share in the consumer price (GMMp) is calculated as:

$$\text{GMM}_{\text{P}} = \frac{\text{Consumers Price} - \text{Marketing Gross Margin}}{\text{Consumers Price}} \times 1$$

$$\text{GMM}_{\text{P}} = 1 - \text{TGMM}$$

where, GMMp is = the producer’s share in consumer price

The net marketing margin (NMM) is the percentage of the final price earned by the intermediaries as their net income after their marketing costs are deducted. Thus the net marketing margin is calculated as:

$$\text{NMM} = \frac{\text{Gross Marketing Margin} - \text{Marketing Costs}}{\text{Consumer Price}} \text{X}100 \quad (3)$$

RESULTS AND DISCUSSION

Types of vegetables produced by sampled households in Ejere district

In Ejere district, different types of vegetables are grown with different intensities in terms of land and other input allocation, purpose of production and marketability. The survey results revealed that most commonly grown vegetables in terms of the number of sampled growers are onion (70.8%), potato (65.0%), cabbage (18.33%), pepper (12.5%), tomato (10.83%) and Garlic (8.33%). (Table 1).

Profitability of onion production in Ejere district

Table2 shows the profitability of onion production per hectare of land. Onion can be produced in two cycles

Table 2. Average cost of production and profitability of onion (Birr/ha).

Item	Onion (N=85)
Seed (Birr)	6919.41
DAP (Birr)	2979.52
Urea (Birr)	2520
Labor for crop management(Birr)	1246.23
Labor for Harvesting(Birr)	1126.24
Fuel (Birr)	3436.23
Chemicals (Birr)	5229.23
Total variable cost (Birr)	**23,456.86**
Rental value of land (Birr/year)	4000
Depreciation of farm implements (Birr)	538.47
Total fixed cost (Birr)	**4,538.47**
Total production cost (Birr/ha)	27,995.33
Yield (qt/ha)	118
Income	98,530
Net return (income)	**70,534.67**
Cost (Birr/qt) (Production cost)	**237.25**

Source: Own computation from survey result, 2015.

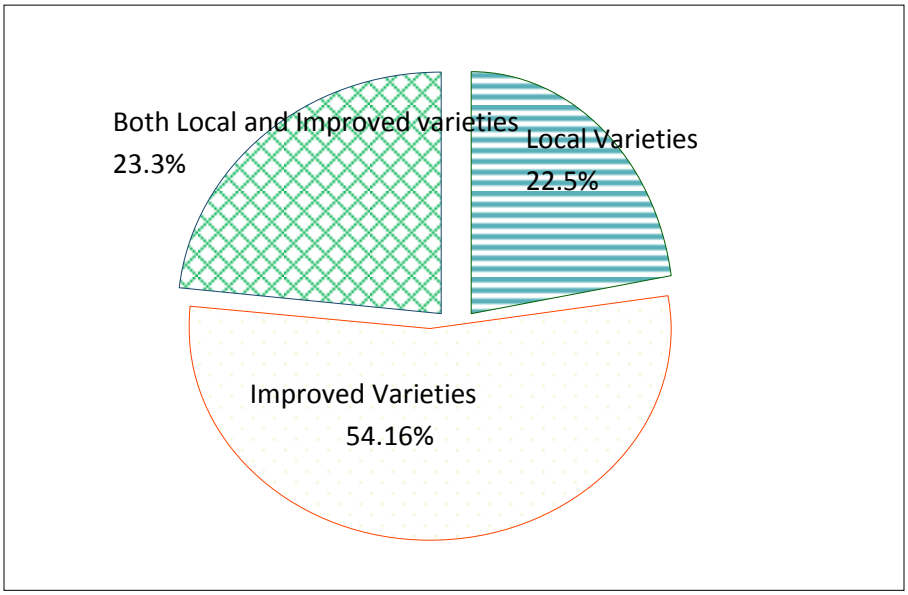

Figure 1. Type of vegetables seed used by sampled producers.
Source: Own survey results, 2015.

during a year. This will permit crop rotation and effective use of land. Based on the survey data, the costs of production and returns at the prevailing prices were used to estimate the benefits. This section aims at identifying and quantifying different costs, which are incurred by the farmers in production process. The cost involved in onion cultivation can be subdivided in two ways: variable cost and fixed cost.

The labor cost given in Table 2 was estimated based on the price or wage of labour in locality per man day. Urea and DAP were valued at Birr 1200 and 1400 per qt, respectively. Chemical costs, seed cost, fuel cost and, rental value of land were reported by the sampled respondents. The mean productivity of onion was 118 qt/ha, respectively which was reported by sampled households. Rental value of land was imputed by taking into account the prevailing rents in the study area per hectare per year for potato. Depreciation charges on farm implements were calculated using the straight-line method, i.e., by dividing the original cost of item (less salvage value) by the expected life of the item. Average onion output was valued at farm gate price of households which was on average about Birr 835.Income from onion is the value of total production at the farm gate price.

Table 3. Sources of onion seeds for sample respondents.

Source of seed	Onion(N=85)	
	Frequency	%
Own seed	-	-
BoA	16	18.8
Market	68	80.0
Fellow farmers	-	-
Research Center	-	-
Cooperatives	1	1.2
Total	85	100

Source: Own survey results, 2015.

Table 4. Sources of fertilizer and chemicals use for onion production.

Fertilizers use (inorganic fertilizer**)**		
	Frequency	Percent
Yes	84	98.8
No	1	1.2
Total	**85**	**100**
Source of fertilizers		
BoA	35	41.2
Market	3	3.5
Cooperative	47	55.3
Total	**85**	**100**
Source of chemicals (pesticides and herbicides**)**		
Private traders (Market)	71	83.6
BoA	7	8.2
Cooperatives Shops	7	8.2
Total	**85**	**100**

Source: Own survey result, 2015.

Accordingly, the total average cost of production of onion is Birr 237.25 per quintal. The net income per hectare of onion is Birr 70,534.67.

Onion value chain actors and major functions

Value chain is a sequence of related business activities (functions), from the provision of specific inputs for a particular product to primary production, processing, sales and distribution, to final consumption. It is clear that along with the farmers, a number of actors participated in the marketing of onion from the production point to the consumer point. From an institutional perspective, a value chain can be defined as the organizational arrangements linking and coordinating the producers, processors, traders, and distributors who perform these functions (Joshi and Gurung, 2009). The main actors involved in the onion value chain, their roles and inter relationships are discussed below.

Inputs suppliers

Agriculture value chain analysis begins at the input supply level. Inputs such as seeds, fertilizer, pesticides, and farm implements are supplied by cooperatives, BoA, traders, and informal farmers to farmer's exchange. Adequacy and quality of onion seeds are crucial for increased production. Sampled producers were asked whether they use local or improved variety of seed and the largest proportion of the producers (54.2%) used improved varieties while 23.3% both improved and local varieties and (22.5%) only local varieties of onion seed (Figure 1).

The survey results indicates that about 80% of sampled producers purchased seed from market for onion production (Table 3). The majority of farmers prepared their own seedling.

Regarding fertilizers, the majority of producers used inorganic fertilizer (DAP and Urea) depending on the land size allocated to vegetables and the soil fertility status as perceived by the producers while some producers used inorganic fertilizer (manure and compost). The results indicated that most of the sampled producers who used fertilizer procured it from cooperatives (55.5%), from BoA (41%) and from local market (3.42%) while source of organic fertilizer is producers themselves.

The survey results further revealed that in Table 4, farmers purchase pesticides and herbicides from different

Table 5. Proportion of households with their own motor and source of water for irrigation.

Source of irrigation water	Frequency	Percent
Rivers	80	94.12
Ponds	3	3.53
Hand dung Halls	2	2.35
Total	**85**	**100**
Owned motor for irrigation		
Yes	44	51.8
No	41	48.2
Total	**85**	**100**

Source: Own survey results, 2015.

Table 6: Onion production mechanism of producers.

Onion growing	Frequency	Percent
Sole cropping	82	96.5
Inter cropping	2	3.5
Total	85	100

Source: Own survey result, 2015.

sources. The major suppliers of chemicals are private traders from market, cooperative shops, and through theagriculture and rural development office. Regarding farm implements, the major suppliers are local market, agriculture office, and fellow farmers.

Producers

Farmers are the primary and most valued actor in the onion value chain. Two categories of farmers were noticed in production areas: subsistence farmers and small investors' farmers. Producers decide, what input to use, when to seed and harvest, how much to consume, and how much to sell, considering the available resource. They perform most of the value chain functions right from farm inputs preparation on their farms to post harvest handling and marketing. The major value chain functions that onion producers perform include land preparation, growing/planting/, fertilization, irrigating, protecting from weed, pest/disease, harvesting and post-harvest handling and marketing.

In Ejere district onion is produced based on irrigation and small number of farmers indicated that they had used rained system. From sampled producers about 90% are engaged on onion production using irrigation and remaining 10% produced onion under rain fed. Water for the irrigated agriculture is fundamental resource otherwise it could not be possible to cultivate vegetables. Berga River and its catchments is the major source of water for sampled respondents. The survey results depicted that, about 93.58% of sampled households' access irrigated water from River while about 4.59 and 1.83% of irrigated waters comes from pond and hand dung hall, respectively. Most of the farmers in the districts rely on River for irrigation this was the means of water reduction. From the sampled farmers 51.7% of them have owned motors and the rest 48.3% of them rented or farmed in partnership apart from those who have motors and pumps (Table5).

As it is depicted in the Table 6, 96.67% of sampled respondents were producing onion by sole cropping and small proportion 3.33% were producing by inter cropping with others short cycled products. Most farmers sell the majority of their onion products at harvest time, keeping only small amount for home consumption and for seed. Farmers are producing onion for market and they sell to wholesalers at farm gate and village markets. They also sell to different types of actors such as rural collectors, consumers and retailers (with varying volume of sell) at local market.

Rural collectors

Rural collectors are independent operators at primary markets who assemble and transport onion from smallholder farmers, using pack animals and small trucks for sale to larger markets. The local traders play the key role as in the onion value chain in area; their trading activities include buying and assembling, repacking, sorting, and selling to wholesalers typically transport on donkeys or cart to nearest town. Their major sales outlets are relatively wholesalers. And most of these outlets own or rent storage but usually do not store for more than two or three days. These local traders collect onion for wholesalers and wholesalers purchase from rural collectors by covering all cost and also additional fee for their services.

Brokers/middle men

Brokers in the district have regular and temporary customers from major towns and cities across the

country. Brokers facilitate transaction by convincing farmers to sale his onion and facilitating the process of searching good quality and quantity of onion to wholesalers. The share of profit that goes to brokers varies from farmer to farmer and from trader to trader. The brokers sometimes go beyond facilitation of transaction and tend to set prices and make extra benefits from the process. A few wholesalers go straight to farmers' fields without using brokers to purchase the onion products from the farmers where they negotiate prices. Brokers do not follow proper business conduct and as a result they constrain the marketing system more than they facilitate. In case the producer is not sold through broker, they forced to sell at the lower price because of perishability of the product. The broker travel to the rural areas and contact producers, they inspect the product quality, estimate output, set price and come back to communicating with wholesalers to purchase and transport. The farmers have no idea of the price paid by the wholesalers and only receive what has been bargained with the broker.

Wholesalers

Wholesalers are traders that buy onion from rural collectors and also directly from farmers, usually those in surplus areas for resale in deficit, to larger market centers and retailers with better financial and information capacity. Wholesalers are the major buyers of onion as they buy at least a truck load of onion at a time from farmers. They mostly purchase from farmers and local collectors. There are no wholesalers who have the license to do wholesale in the study district. But the majority of wholesalers are located outside the districts mainly in Addis Ababa (Atikilt Tera). Wholesalers mostly purchase in bulk from the districts, transport and sell the produce to the major towns like Assosa, Wollega and Addis Ababa. Wholesalers buy onion from producers through brokers who represent them in onion buying activities. They have better storage, transport and communication access than other traders.

Processors

Processing of onion in the sense of preserving and value addition is not as such practiced in the study areas. Onion is commonly consumed in the form of cooked meals in different traditional *dishes* or "*wat*".

Retailers

Retailers are key actors in onion value chain within and outside the study area. These are known for their limited capacity of purchasing and handling products and low financial and information capacity. They are the last link between producers and consumers. There are two types of retailers in the study area district retailers and central retailers. District retailers are buying onion either from farmers or wholesale traders. While central (urban) retailers in major cities mostly they buy from wholesalers and sell to urban consumers. The supermarket and shops are mainly in the major cities and commonly buy onion from wholesalers. During the market visit, it was observed that retailers keep small amount of potatoes, onion, tomato, and other vegetables. Consumers usually buy the product from retailers as they offer according to requirement and purchasing power of the buyers.

Consumers

Consumers are final purchasers of onion products mostly from retailers for consumption purpose. Onion consumers are individual households (rural and urban dwellers) hotels and institutions. The majority of sampled consumers preferred dry, large size and red color onions followed by dry, medium size and clean onion. Consumers think that if the chain becomes shorter and shorter the price of onion will be reduced.

Enablers and facilitators

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 onion value chain are those who are not directly related to the onion value chain but provide different supports to the value chain actors. The support functions include different services (e.g. credit), 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, etc. In the study areas, there are many institutions supporting the onion value chain in one way or another. The most common support providers are District Agriculture Office, District Irrigation and Development Authority, District Trade and Market Development Office, Cooperatives, Oromia Micro Finance Institutions, Banks and Private transporters. Some service providers extend services beyond one function and others are limited to a specific function.

District Irrigation and Development Authority and Agricultural 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 seed bed preparation, fertilizer application, crop protection and post-harvest handling. The key

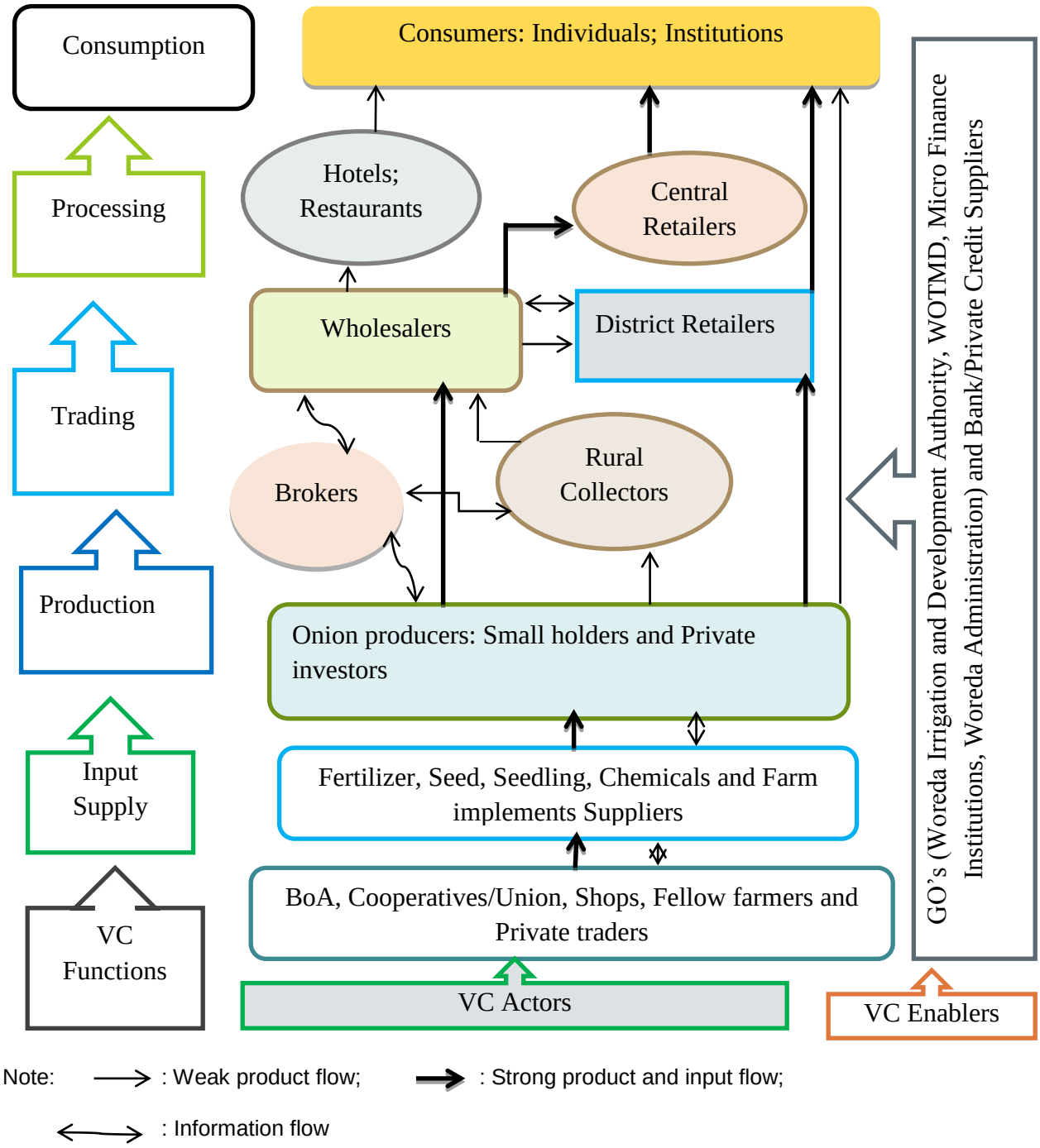

Figure 2. Value chain map of onion in the study area
Source: Own sketch from survey result, 2015.

informant's interview point out that the producers get extension service on general agriculture and it is not sufficient to improve the technical skill of the producers.The most common sources of loan are Oromia Micro Finance Institutions and relatives/friends, since they do not require collateral. Moreover, it was found that NGOs and Banks are operating in providing technical service and offers credit support to the farmers. But the farmers are not receiving sufficient service regarding finance related issue in the study area. In the study areas, cooperatives do not support producers in the value chain of onion as expected, they supply only

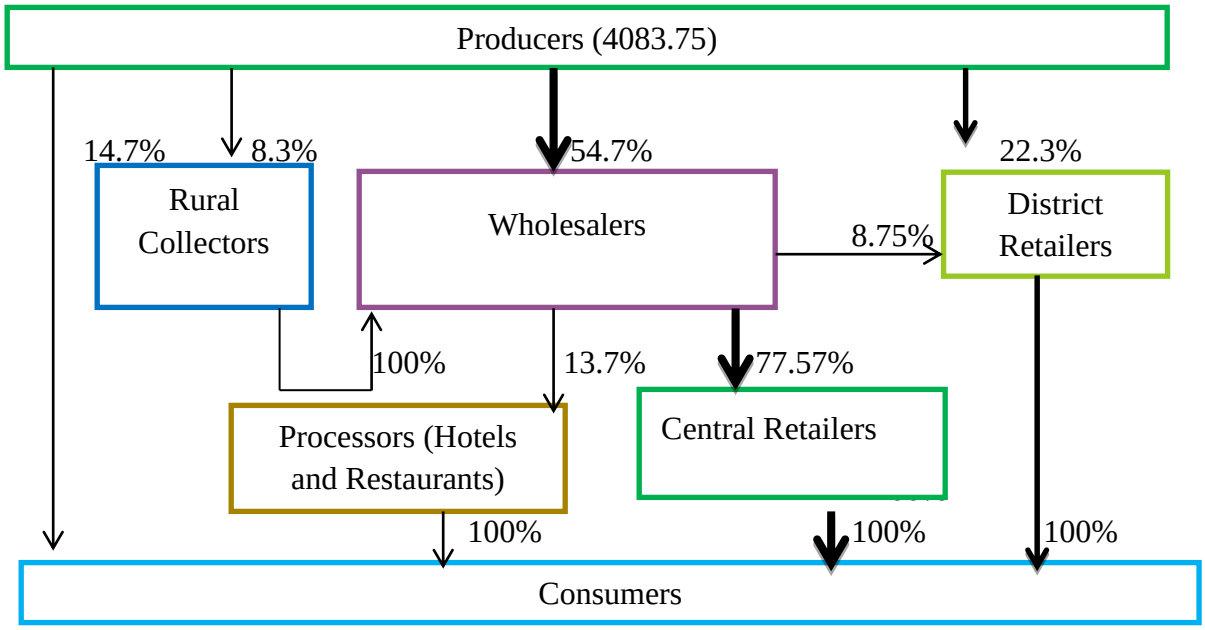

Figure 3. Onion market channel.
Source: Own sketch from survey result, 2015.

fertilizer and sugar/oil for producers. Figure 2 displays the functions or processes in onion value chain map.

Marketing Channels and Marketing Margin

Onion marketing channels

Six main alternative channels were identified for onion marketing. These marketing channels were identified from the point of production until the product reaches the final consumer through different intermediaries with proportion of onion marketed as indicated in Figure 2. The amount of onion transacted in these market channels was different. Out of total 4,083.75 quintals of onion marketed by sampled households during survey year 1,732.7quintals was marketed through channel IV and 910.67 quintals was through channel III which were found to be dominant in terms of onion volume of transaction. The survey results revealed that wholesalers and retailers were the dominants receivers of onion with percentage share of 54.7% and 22.3%, respectively in terms of volume of onion supply (Figure 3).

Channel I: Producer-Consumer

This channel is the shortest channel at which producers directly sell to consumers at market day. It represented 14.7% of the total onion marketed which amounted 600.31quintals of onion during the survey period.

Channel II: Producer-Rural collector-Wholesaler-Central retailer-Consumer

Rural collectors are buying onion from producers in the study area and they sell to wholesaler. It accounted for 8.3% of total onion marketed (338.95quintals) during the survey period.

Channel III: Producer-District retailers-Consumer

Districts retailers in the production area buy without the involvement of brokers depending on the volume of the product and resale to consumer. It represented 22.3% of total onion marketed 910.67quintals during the survey period. The channel was found to be the second most important marketing channel in terms of volume.

Channel IV: Producer-Wholesaler-Central retailer-Consumer

This is the largest and most important channel, accounting for approximately 42.4% of total marketed volume of onion 1,732.7quintals during survey year. Wholesalers buy potato at the farm gate through brokers or directly from producers and sell it to retailers.

Channel V: Producer-Wholesaler-Processor-Consumer

The only difference between the channel IV and channel V is that the wholesaler buys from producer and sold to hotels,

Table 7. Onion average marketing cost for different marketing agents (Birr/qt).

Cost of marketing	Actors				
	Producers	Rural collectors	District retailers	Wholesalers	Central retailers
Sack	10.3	10	10.42	9	10
Load/unload	12	7	15	12.91	10
Labor for packing		5		5	
Transport	30	25		35	
Storage cost			12.5	15	10.45
Telephone cost		3	2	3	
Wastage Loss	30.23	12.4	20.5	12.67	5.45
Personal expense				5	
Brokerage				12	
Tax	4	4	7.57	12	12
Others cost	6	10	15	10	10
Total cost	**93.23**	**76.4**	**82.99**	**131.58**	**57.9**

Source: Own computation from survey results, 2015.

café or institutions. It accounted for 7.49% of total onion marketed (306.12quintals) during the survey period.

Channel VI: Producer-Wholesaler-District retailer-Consumer

Wholesalers are buying vegetable from onion producers in the study area and they distribute to district retailers. It accounted for 4.77% of total onion marketed 195quintals during the survey period.

Onion marketing cost and margin analysis

Table 7 indicates different types of marketing cost related to the transaction of onion by producers, rural collectors, district retailers, wholesalers, and urban retailers. The different average transaction costs associated with the marketing process of a single quintal till it reached the next dealer was assessed. The highest marketing cost is incurred by thewholesaler which was 131.58 birr/qt while central retailers incurred the lowest market cost which was (46.9 birr/qt).Average marketing cost of producers was 93.23 birr/qt when they sell to consumers and district retailers while 63.23 birr/qt when they sell to collectors.

The difference between the total income from onion trading and the costs incurred in the process of onion trading gives the marketing profit of traders. As depicted in the Table 8, producers marketing profit share was highest 606.5 birr/qt when they directly sell to wholesalers in channel IV, V and VI followed when they sell to consumers which accounts 569.52 birr/qt in channel I while took lowest profit when they direct sell to district retailers and collectors which accounts, 507.02 birr/qt and 537.02 birr/qt in channel III and II, respectively. From traders the highest marketing profit was taken by district retailer 259.51 birr/qt in channel III followed by wholesalers which is 182.97 birr/qt in channel IV and V and the lowest market profit share was taken by central retailers which is 25.5 birr/qt in channel II and IV.

As indicated in Table 8, total gross marketing margin (TGMM) is highest in channel II and IV which was 32.75% and 32.05, respectively and lowest in channel V which was 27.16%. The survey results also showed that the maximum producer's share (GMMp) is highest in channel V which was 72.84% from the total consumers' price and lowest in channel II and IV which was 67.45% and 67.95%, respectively. From traders, district retailers' obtain maximum gross margin, which is 29.02% of the consumers' price in channel III and followed by wholesalers' which accounts, 27.16% and 25.33% in channel V and IV, respectively. The lowest gross marketing margin was taken by central retailers' and rural collectors in channel II which is 6.72% and 9.1%, respectively.

Challenges and opportunities of actors along onion value chain

The major challenge and opportunities of onion value chain are summarized in Table 9.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Onion is considered as one of the most important vegetable crops produced on large scale in Ethiopia. The area under onion is increasing from time to time mainly due to its high profitability per unit area and ease of production, and the increases in small scale irrigation areas. The major actors involved in potato and onion value chain include input suppliers, producers, rural collectors, wholesalers, retailers, processors and consumers. Most producers sell their products to the traders while some of them sale for consumers. However, it is also found that wholesalers, retailers and collectors directly purchase the vegetables from the farmers.About six different market channels of onion are

Tables 8. Onion marketing margin for different channels (Birr/qt).

Agents		Onion Marketing Channels					
		I	II	III	IV	V	VI
Producers	Purchase price						
	Production cost	237.25	237.25	237.25	237.25	237.25	237.25
	Marketing cost	93.23	63.23	93.23			
	Selling price	900	837.5	837.5	843.75	843.75	843.75
	Market profit	569.52	537.02	507.02	606.5	606.5	606.5
	GMM_P (%)	100	67.45	70.98	67.95	72.84	70.32
Rural collectors	Purchase price		837.5				
	Production cost						
	Marketing cost		76.4				
	Selling price		950				
	Market profit		36.1				
	GMM_{RC} (%)		9.1				
District retailers	Purchase price			837.5			1000
	Production cost						
	Marketing cost			82.99			82.99
	Selling price			1180			1200
	Market profit			259.51			117.01
	GMM_{DR} (%)			29.02			16.67
Wholesalers	Purchase price		950		843.75	843.75	843.75
	Production cost						
	Marketing cost		131.58		131.58	131.58	89.58
	Selling price		1158.3		1158.3	1158.3	1000
	Market profit		76.72		182.97	182.97	66.67
	GMM_W (%)		16.78		25.33	27.16	13.02
Central retailers	Purchase price		1158.3		1158.3		
	Production cost						
	Marketing cost		57.9		57.9		
	Selling price		1241.7		1241.7		
	Market profit		25.5		25.5		
	GMM_{CR} (%)		6.72		6.72		
	TGMM (%)	0	32.55	29.02	32.05	27.16	29.68

Source: Own computation from survey results, 2015.

also identified in the study area. Producers marketing profit share was highest (606.5 birr/qt) when they directly sell to wholesalers in channel IV, V and VI and lowest when they directly sell to district retailers which was about (507.02) birr/qt in channel III. From traders the highest onion marketing profit was taken by district retailer which was about (262.01 birr/qt) followed by wholesalers which was about (191.72 birr/qt). The total gross marketing margin was maximum (32.55%) in channel II and the minimum (27.16) in Channel V. Total gross marketing margin (TGMM) was highest in channel II and IV which accounts, 32.75% and 32.05, respectively and lowest in Channel V which was 27.16%. The maximum producer's share (GMMp) is highest (72.84%) from the total consumers' price in channel V and lowest (67.45%) in channel II.

The findings of this study enabled us to make the following recommendations for policy makers, developments actors and researchers who have strong interest in promoting onion production and marketing for equal benefits among value chain actors. It is highly recommended to improve the input supply system so that farmers receive the right type of production inputs, quantity and quality needed at the right time. Improving system will protect farmers from purchasing low quality inputs by high inputs cost. The role of research institutes and universities are crucial in identifying high yielding and disease resistant varieties to improve production and productivity of onion. In order to overcome irrigation water shortage government should give attention to scaled up underground water and other water sources to expand onion production and productivity. Improving the business planning skills of smallholders' to produce diversified vegetables which can be targeted both for national and international markets is priority issues. Due to the lack of business knowledge and marketing system , farmers are unable to take farming as business. Therefore, there is a need to

Table 9. Summary of constraints and opportunities along onion value chain.

Stage of value chain	Constraints	Opportunities	Intervention needed
Inputs supply	-Shortage of good quality seed, herbicides/pesticides, farm implements -High cost of inputs	-High demand for purchase quality seed, chemicals and farm implements -Demand for compost application	-Government support for easy access to inputs -Strengthen linkage between input suppliers and farmers
Production	-Reduction of irrigation water availability -Limited knowledge on recommended agronomic practice and post-harvest handling -Low irrigation facility -Diseases and pest attacks -Lack of storage and high post-harvest loss	-Availability of underground water -Availability of daily laborer and human resource development --Favorable climatic conditions and fertile land for vegetables production -Enabling policy environment and support from public organization and NGOs	-Concerned bodies should give attention to underground water -Conduct trainings to farmers for improved quality production and post-harvest handling -Training to smallholders on disease/pest control method --Strengthen credits service providers institutions and improve storage facility
Marketing/Trading	-Poor transport facility -Price setting problem -Product quality problem -Presence of unlicensed traders -Low price for the products and perishability of the product --Limited function of cooperatives --Limited market research and credit service	-Government investment on infrastructure development -Establishment of cooperatives -High market demand for vegetables product -Establishments of credit providers -Closeness of study areas to Addis Ababa city -Government encourage research	-Strengthen functions of farmers cooperatives -Control unlicensed traders -Increase credibility and market linkages of vegetables value chain actors --Domestic market and export market promotion --Improving farmers bargaining power by supporting farmers cooperatives
Processing	-Lack of processing facility	-Active involvement of private sector in the industry	-Encourage private to invest on the sector
Consumers	-Income shortage -Lack of consumers cooperatives	-High consumption preference	-Improve consumers awareness on consumption habits of vegetables

Source: Own survey results, 2015.

capacitate farmers by providing continuous training on production and marketing of onion. Strengthening the linkage/interaction among value chain actors, 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. So the chain actors should work in an integrated way to improve production, reduce post-harvest losses, and to strengthen sustainable market linkage in the study areas. In additions to this, organizing (voluntarily) traders and producers and establish trustful and strong trade agreements between the two institutions is crucial to minimize unfair price created by brokers. With a strong relationship between traders and producers, searching for market information and dissemination will be crucial.

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