Tomato Value Chain Analysis: The Case of Kobo District

Daniel Lemlem (danielemlem@yahoo.com)

Sirinka Agricultural Research Center, P.O.Box 74, Weldia, Ethiopia

Abstract

Tomato is one of the most perishable types of vegetables dominantly produced by small scale producers that require careful attention along its value chains. This paper presents major findings of tomato value chain analysis, in the case of Kobo district. The objective of the study was to identify the major value reducing and value adding activities of tomato value chain under irrigation based production in Kobo area. Survey was employed to collect data in a cross sectional basis in 2010. Finally, the collected data were analyzed in descriptive statistical tools, content analysis and interpretation methods, under the guideline of Michel Porter's qualitative value chain model using SPSS 16 software.

Tomato producers have two major marketing places, farm gate and weekly open markets at Kobo town. Out of the total tomato sold by producers, 93.4, 5.28 and 1.45% were sold to whole sellers, retailers and consumers respectively. Sixty four tomato whole sale buyers were identified as the major buyers of tomato in 2009/10 production, out of them 14.06% were Mekele whole sellers. Out of the total whole sale volume, 76.74 and 23.37% were sold through dealers and directly to whole sellers, respectively. Mekele whole sellers commonly use dealers to buy tomato at farm gate market. They absorbed 69.63% of the total whole sale shares which is equivalent to 65% of the total supply in 2009/10. Moreover, 72.33% of the total supply which is equivalent to 76.74% of the total whole sale shares was sold through dealers at farm gate market. Farm gate prices of tomatoes varied between 0.36 and 1.33 birr/kg in April and August of 2009/10, respectively. Producers incurred 0.67 birr to produce and sell a single kilogram of marketable fresh tomatoes to Mekele whole sellers. This production cost covered 17.40% of the total costs required to produce and distribute one kg of tomatoes to Mekele consumers. Producers obtained a net of 0.21 birr out of a single kilogram of marketed fresh tomatoes to Mekele whole sellers, this benefit covered 13.29 % of the total net benefits of a kilogram of tomatoes obtained after it is sold to Mekele consumers. Much of the benefits accrued to Mekele whole sellers, but farmers deserved the least benefit out of the total benefits distributed. In the absence of effective market linkages, encouraging farmers to produce perishable vegetables become futile effort for subsistence farmers. Therefore, regulating market of vegetables is critically important to minimize the burdens of imperfect markets from the shoulders of the poor producers.

Key words: Value chain, Producer, Whole seller, Dealer, Imperfect market, Tomato, Kobo

Introduction

Ui f! pwfsbmm qfsgpsn bodf! pg Fui jpqjb t! fdpopn z! jt! i jhi mz! jogmvfodfe! cz! ui f! performance of the agricultural sector which itself is subject to vagaries of weather and related natural and synthetic factors. On the face of unreliable and inconsistent nature of rain dependent Ethiopian agriculture, expansion of irrigation facilities and development of vegetable production provide multiple advantages in creating both backward and gpsx bse! fn qmpzn fou pqqpsuvojujft! bdsptt! wbmf! di bjo! bdupst ! boe! jn qspwjoh! gbsn fst ! income, supporting local economies and national economies. Ethiopia has untapped potentials of vegetable production and marketing (MOA, 2006, 2007; WB, 2005). Amhara National Regional State is one of the regions having good potentials of irrigation and market opportunities for vegetable production (CSA, 1994). Despite rapidly increasing trends of domestic and international market demands for tomato, its contribution for Ethiopia in general (WB, 2005), and Kobo district in particular (SWHISA, 2007; WoARD, 2009) is still insignificant. Kobo district is one of the districts of Amhara region that have high irrigation potential to produce vegetables like tomato with better market advantages, however, the district is still characterized by one of the most drought prone area.

Farmers in Kobo area produced three times in a year using irrigation in Golina irrigation scheme for instance, cereal production is dominantly covering the largest area followed by vegetables in all the three production seasons. In 2009/10, out of the total land cultivated in the first and second irrigation season and supplementary production 9.8, 17.57, and 7.77% of land was covered by tomato production respectively. Productivity of tomato during supplementary, first and second irrigation production seasons were estimated at 12.0, 10.15 and 9.78 tons/ha respectively. As a result of seasonal price fluctuation, market imperfections and sometimes surplus production farmers claimed that they have experienced dumping of tomatoes in the market, feeding for cattle and sell with minimum price.

Monitoring market performance and creating effective coordination between producers, local dealers and large traders through forums and discussions is essential to develop common understanding between chain actors for their mutual benefits. Market is the

central element of development in the agricultural development. Hence, thinking beyond productivity, and incorporating themes of profitability and competitiveness is an option less intervened for the benefits of major value chain actors. The value chain concept has proven particularly useful for the identification and formulation of development of strategies for improved agricultural and rural development (ECA, 2009). Hence, value chain analysis help to find leverage point to uplift a maximum load of value reducing elements that hinder the performances of tomato chain actors with minimum effort in the case study area, Kobo district.

The general objective of the study was to identify the major value reducing and value adding activities of tomato value chain. There were three specific objectives in the study; 1) to identify major actors, their roles and relationships in the tomato value chain, 2) to assess cost-benefit distributions among major market actors in tomato value chain, and 3) finally to assess constrains and opportunities faced by the tomato value chain actors.

Materials and Methods

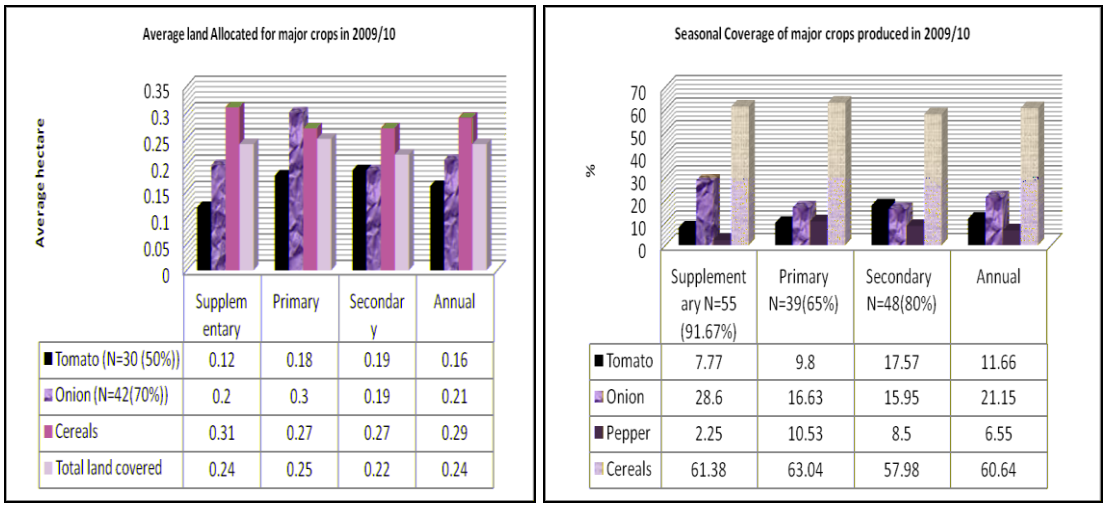
Survey research design was employed in a cross sectional basis in 2010. The study area Golina modern irrigation scheme was selected purposefully for two major reasons: for its high irrigation potential and large vegetable production coverage in general and tomato in particular. The selected scheme has irrigated 400ha that serves 1375 households (HHs) through surface irrigation methods using Golina River. Following the scheme selection, a total of 106 respondents were selected. About 60 vegetable producer households were selected by simple random sampling and 46 traders were selected purposively for their participation in tomato trading, degree of participation, distance factors and accessibility/availability. Besides, focus group discussions, observations and key informant interviews were used to collect the relevant primary data from dealers, key informants, major whole sellers, retailers, agricultural officers and other relevant information sources. Finally, the collected data were analyzed in descriptive statistical tools, simple cost benefit analysis, content analysis and joufsqsfubujpo! n fui pet! vtjoh! T TI! 27! tpguxbsf/! Gps! ui f! bobmzt jt ! N jdi fmn psuf s t! qualitative value chain model (Raphael K. and Mike M, 2000) was applied as a

guideline. The model is a simple cause and effect relationship that helps to identify both value reducing and value adding activities across value chains.

Results and Discussion

Characteristics of Households and their Production

Table 1 prftfout!tbn qnfli pvtfi pnat !di bsbdufsjtujdt!boe!ui fjs!upn bup!qspevdujpo!tztufn /! Out of the total respondents, 50% produced tomato, 83.33% were male and 17.67 % were female. From the total sampled producers, 85 % of the household heads were male while the rest 15 % were female (Table 1). From the total annual cultivated land in 2009/10 in the study area, 4.84 ha (11.66%), 8.78 ha (21.15%), 2.72 ha (6.55%), and 25.18 ha (60.64%) were covered by tomato, onion, pepper, and cereals respectively (Figure 1). The study showed that more land was allocated to cereals than vegetables across all the three production seasons.



	Supplementary	Primary	Secondary	Annual
Tomato (N=30 (50%))	0.12	0.18	0.19	0.16
Onion (N=42(70%))	0.2	0.3	0.19	0.21
Cereals	0.31	0.27	0.27	0.29
Total land covered	0.24	0.25	0.22	0.24

	Supplementary N=55 (91.67%)	Primary N=39(65%)	Secondary N=48(80%)	Annual
Tomato	7.77	9.8	17.57	11.66
Onion	28.6	16.63	15.95	21.15
Pepper	2.25	10.53	8.5	6.55
Cereals	61.38	63.04	57.98	60.64

Figure 1. Land allocation and coverage in Golina irrigation scheme **(**Source: Own field survey, 2010)

Tomato Production in Golina Irrigation Scheme

Tomato is produced three times in a year in Kobo-Golina modern irrigation scheme, constituting supplementary, first and second irrigation production periods from July to October, October to end of January and February to May, respectively. Out of the total land cultivated in first, second, and supplementary irrigation production periods in 2009/10, 9.8%, 17.57% and 7.77% of land was allocated for tomato production,

respectively. Productivity of tomato during supplementary, first and second irrigation production seasons were estimated to be 12.0, 10.15, and 13.6 tons/ha respectively (Table 2). All tomato producers do not use tomato staking/bedding methods due to lack of awareness, lack of access of bed making materials, and labor shortage.

If tomato fruits are not handled carefully and marketed timely; they decay easily, which affects their taste, flavor, nutritional and economical values. About 33, 17 and 47% of the respondents indicated that tomato is harvested at the start of ripening, when the fruit color looks red or orange, and when the fruit color looks mixed green and red (Table 1). Farmers usually adjust harvesting days to gain better advantages of higher prices through strategies of waiting for some days and harvest on the coming market days. Hence, the average number of days to store tomatoes during supplementary, first and second irrigation production periods were, 1.64, 1.17, and 1.23 days respectively (Table 2). It was indicated that producers did not store tomato for longer periods; the average number of storage days was 1.37 days (range from 1-2 days).

Materials like wooden crate, plastic cart, and locally made bamboo basket were used to collect tomato product. About 86.7% of tomato producers used wooden box to collect tomato fruits, however, only 50% of the total producers had wooden box to collect tomatoes (Table 1). Producers indicated that traders from Mekele provide them with wooden crates to harvest and collect their products at the time of harvest. The average weight of wooden cart ranges from 5-7 kg and its total capacity ranges from 50-60 kg tomato on average. Traders usually pay farmers only for a 50kg tomato. Most of the farmers transport their product from field to the main road side by using either their own cart or rented one, and others use vehicles, pack animals and human transport. From the total multiple responses of 133.3% given by producers, 86.7% showed that cart is commonly used to transport produces to Kobo markets while the rest 46.7 % used vehicles (Table 1). The total average loss of tomato during supplementary, first and second irrigation periods were 42.76%, 29.97% and 25.43% of the products respectively (Table 4). According to Girma Abera, the loss of vegetables between production and consumption is estimated to be 25-35%. He indicated that, the purpose of packing, transport and storage is to mitigate post harvest losses in the chain through producer to consumer. However, surplus product and market imperfection were deep-rooted

challenges that farmers faced both pre- and post-harvest losses. One of the interviewed farmer, Abera, said *"If you have the patience to wait in Kobo market until lunch time, the majority of the product are either transported back home, or dump in the market not to incur transportation cost while our cattle lack forage to feed, or some fortunate producers may sell with a very low prices (one cart of volume 50kg at 4 to 5 Birr price).* This implies that farmers faced challenges of market which may affect their income and livelihood. In Kobo open markets, farmers have experienced in dumping tomatoes in open markets, feeding tomatoes for cattle, selling tomatoes at very low prices. According to tomato producers, the order of rank of problems from 1 to 5 was: market insecurity, low output prices, moisture stress, input scarcity and disease and insect problems (Table 3). Bezabih Emana and Hadera Gebremedhin, (2007) also indicated that market is the major constraints of vegetable production in Ethiopia.

Table 1. Characteristics of households and tomato production

Characteristics	**Cases**	**Total Respondents**		**Tomato Producers**	
		N	**%**	**N**	**%**
HH sex	Male	51	85.0	25	83.33
	Female	9	15.0	5	16.67
	Total	60	100.0	30	50
Tomato seed used (N=30)	Improved seed	-	-	25	75
	Local	-	-	5	25
Plough (N=60)	Own	38	63.3	-	-
Pest control (N=30)	Chemical	-	-	22	73.3
Soil fertility (N=30)	Fertilizer	-	-	8	26.7
	Manure	-	-	15	50
	Compost	-	-	3	10
Bedding (N=30)	Staking	-	-	0	0
Watering (N=60)	Furrowing	45	75	-	-
	Flooding	15	25	-	-
Harvesting stage (N=30)	Start of ripping	-	-	10	33.3
	Orange color	-	-	5	16.7
	Mixed of green and red	-	-	14	46.7
	Missed data	-	-	1	3.3
	Total	-	-	30	100
Collecting materials used (N=30)	Wooden cart	-	-	26	86.7
	Plastic cart	-	-	2	6.7
	Basket and cartoon	-	-	4	13.3
Wooden cart ownership (N=30)	None	-	-	15	50
	Who own 1-2	-	-	25	83.33
	Who own 3	-	-	25	83.33
Transportation	Cart	-	-	26	86.7 (65)
	Vehicles and others	-	-	14	46.7 (35)
	Total	-	-	40	133.3 (100)

Table 2. Tomato productivity and harvest losses (Source: Own field survey, 2010)

Season loss	Production and loss	N	Min.	Max.	Mean	Std. Dev	%
Supplementary	Productivity, t/ha	11	4.0	33.3	12.0	8.2	
	Pre harvest loss, t/ha	11	1.0	4.3	2.5	1.2	21.02
	Post harvest loss, t/ha	11	1.0	6.0	2.6	1.68	21.74
	Total loss, t/ha	11	2.0	10.3	5.1	2.29	42.76
First irrigation	Productivity, t/ha	6	1.67	24.6	10.1	10.2	
	Pre harvest loss, t/ha	6	1.0	1.7	1.2	0.33	11.91
	Post harvest loss, t/ha	6	1.0	2.67	1.8	0.87	18.06
	Total loss, t/ha	6	2.1	3.67	3.0	0.67	29.97
Second irrigation	Productivity, t/ha	13	2.5	25.0	13.6.6	8.5	
	Pre harvest loss, t/ha	13	1.0	4.3	1.8	0.98	13.19
	Post harvest loss, t/ha	13	1.0	4.3	1.67	0.91	12.24
	Total loss, t/ha	13	2.0	8.67	3.47	1.8	25.43
Annual	Productivity, t/ha	30	2.5	33.3	12.35	8.5	
	Pre harvest loss, t/ha	30	1.0	4.3	1.9	1.1	15.78
	Post harvest loss, t/ha	30	1.0	6.0	2.0	1.3	16.61
	Total loss, t/ha	30	2.0	10.3	4.0	2.0	32.38
Storage life	Storage life in days	30	1	2	1.37	0.49	

Table 3. Problem ranking of tomato production and marketing (Source: Own survey, 2010)

Problems	Not a problem		Low		Medium		High		
	N	%	N	%	N	%	N	%	Rank
Insect	2	6.67	7	23.33	9	30	12	40	5
Diseases	2	6.67	7	23.33	11	36.67	10	33.33	8
Low output price	2	6.67	2	6.67	4	13.33	22	73.33	2
Market insecurity	1	3.33	2	6.67	3	10	24	80	1
High input price	9	30	5	16.67	6	20	10	33.33	8
Input scarcity	4	13.33	1	3.33	9	30	16	53.33	4
Canal damage	5	16.67	7	23.33	5	16.67	13	43.33	7
Moisture stress	2	6.67	4	13.33	7	23.33	17	56.67	3
Labor shortage	10	33.33	6	20	7	23.33	7	23.33	9
Poor service delivery	13	43.33	6	20	5	16.67	6	20	10
Capital shortage	14	46.67	6	20	5	16.67	5	16.67	11
Transport shortage	5	16.67	4	13.33	7	23.33	14	46.67	6
Storage	6	20	7	23.33	2	6.67	15	50	5

The Role of Input and Extension Services in Tomato Value Chain

The role of input providers

There are two major categories of input channels in the study area, namely, informal and formal input sources. The identified formal input sources include; cooperatives, NGOs, Woreda Office of Agriculture (WoA) while informal sources include local chemical suppliers, open markets, and major tomato buyers of Mekele whole sellers. Out of the total tomato producers, 26.7%, 50%, 10%, 73.3% and 75% used fertilizer, manure, compost, chemicals and improved varieties. . Formal input sources supplied fertilizer, fungicide chemical, and improved seed for 85%, 31.9% and 48.9% of the users while the rest of the users are supplied with the informal sources. Formal input sources have small share in supplying certified seeds and chemicals to farmers. Out of the total fertilizer users, 45%, 40%, and 15 % had access chemical through WoA, Cooperatives and open markets, respectively. While, 17.02 %, 14.9%, 36.17%, 25.53%, and 6.38% of fungicide chemical users access from WoA, cooperative, Mekele traders, open markets, and other sources, respectively. Out of the total improved seed users, 35%, 19.05%, 28.87%, 23.81%, 19.05 %, 4.76%, 4.76% access from WoA, cooperatives, Mekele traders, open markets, NGOs and others respectively. Currently, farmers has already built a circular type of relationships through inflow of input and output flows of out puts with some Mekele traveler traders who have shaped and developed the interest of farmers to maintain and sustain their relations. From the analysis group discussion made with producers, and survey results, most farmers prefer informal channels for various reasons: affordability of inputs; ease of timely access; space; input choices; presence of dual relationships with vegetable traders that supply input and collect produces, and divisibility of input amount.

However, out of the total 1375 HH beneficiaries of the scheme, only 270 are members of Golina multipurpose cooperative, majority of the beneficiaries use informal input system. The cooperative runs without having legal entity and enough capital. Hence, unlike the other legalized cooperatives, it does not have any guarantee to buy inputs in credit from other high-level cooperatives and sell produces accordingly.

The role of extension service providers

Out of the total respondents, 81.7, 33.3, 45, 11.7, 78.3, and 11.7 % were adopters of improved seed, fertilizer, manure, compost, pesticide, and credit respectively. About 75% used furrow method of irrigation while the rest 25% used simple flooding techniques. Water committee is less capable and empowered to plan and executes effective crop production and water management. Out of the total respondents, 83.3%, 65%, 60%, 51.7%, 38.3% and 75% indicated that they have poor awareness and knowledge level on areas of market information, fertilizer application, chemical application, improved seed application, vegetable production, and post- harvest handling. Among the major agricultural extension support needs, market information was the major problems of farmers followed by post harvest handling and input uses. Training is other major critical intervention to support producers in pre cultivation, pre-harvest, harvest, and post- harvest practices. However, 8.33%, 13.335 and 78.3% of total respondents indicated that, training was given frequently, rarely, and nothing, respectively. Field visit participation is one of extension approach to create mutual learning opportunities within and between farmers and experts. The study showed that 75 % of the respondents did not participate in field days in 2009/10. Only 45% of producers indicated that Development Agent (DA) assisted them on frequent field visits while 36.5% of the respondents complained that no service was given on field level. The rest 16.67 % indicated that field assistance had been given rarely.

Tomato Market Value Chain Actors and their Roles and Shares

From the analysis of discussions, field visits and surveys it was indicated that, there are different major actors involved in tomato marketing having various roles in moving products from points of production to final consumption. These actors are producers, rural dealers, wholesalers, retailers and consumers (see Figure 2).

Tomato Marketing Structure and the Roles of Producers

Tomato producers have two major marketing options to sell their tomato produces: farm gate market and weekly market centers in Kobo and its surroundings. The buyers at farm gate have large market share but the weekly open markets have many market

players but having very small market share. If there might be lack of common agreements in price setting, amount of supplies, quality of supply, types of transactions, or other conflict sources at farm gate market, producers usually may take produces on the next market days to Kobo open market after a day. Producer farmers are merely participating only in production function having limited bargaining powers at farm gate market. Farmers usually mix poor qualities with good qualities, matured with immature, thick flesh with thin flesh products, processing types with non processing types when they supply to markets. Out of the total tomato sold by producers, 93.4, 5.28 and 1.45% were sold to whole sellers, retailers and consumers respectively. Out of the total whole sale volume, 76.74 and 23.37% were sold through dealers to whole sellers and directly to whole sellers respectively (Figure 2).

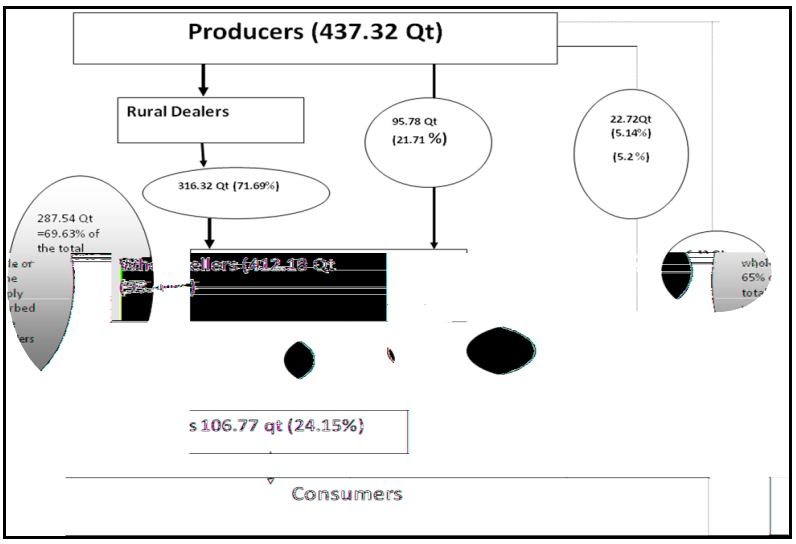


Fig. 2. Tomato product flow and share of actors (Source: Own construction, 2010)

There are an estimated number of 10-15 local dealers engaged themselves in linking producers and Mekele whole sellers at farm gate market. After price agreement made between traders and farmers, farmers usually harvest, collect and transport to main roadside then local dealers sort, grade, pack, weigh and load to lorries. About 72.33% of the total supply which is equivalent to 76.74% of the total whole sale shares was sold through dealers at farm gate market. Out of the total whole sale arranged through dealers, 90.90% were for Mekele buyers. Traders pay dealers at a rate of 0.1 Birr/kg for dealing and 0.15 Birr/kg for grading, packaging and loading activities. Dealers have

jn qpsubou spmf! jo! dpn n vojdbujoh! ui f! cvzfst! boe! tfmmfst! cz! jn qmfn foujoh! usbefst ! interest along the process of price setting and transaction processes.

Through the focus group discussion made with eight local dealers, information triangulation made with some whole sellers and local tax collectors, and from producers, there were about 64 whole sellers participating in tomato market in 2009/10 production period with various market shares. Out of them, 14.06% were Mekele whole sellers which are equivalent to 6.20 % of major vegetable traders of Mekele. Mekele whole sellers commonly use dealers to buy tomato at farm gate market. They absorbed 69.63% of the total whole sale shares which is equivalent to 65% of the total supply of the studied scheme in 2009/10. Markets of Kobo and its surrounding has small share of the total demand that absorbed only 35% of the total supply in the same year. The local market has small shares due to the presence of various nods of supply both in Kobo and outside. According to the group discussions made with dealers, tomato buyers bought 2-3 lorries of tomato per day (each with 4.2 tons capacity) in low production periods and 4-7 in good production period. Tomato business has been running in well organized manners by 126 member traders and 15-20 non-member traders. To meet high demand of tomato in Tigrai region, Mekele traders indicated that 5-15 Lorries of tomato/day and 7-20 Lorries of onion/day have been brought from various potential producing areas throughout the year. Kobo, Kombolicha, Shewarobit and Wereta are the major sources from Amhara while Meki is from Oromia.

Retailers are the final link in the chain that delivered tomato to consumers. They are very numerous as compared to wholesalers and their functions were to sell to consumer in pieces after receiving from wholesalers or farmers. Generally, retailers can be divided into two major categories, namely seasonal type and permanent type retailers. The first type of retailers run a risky type of business, they are large in number who are women and female children at Kobo and its surroundings but do not stay for long in retailing activities. They usually buy a package of 50kg tomato early in the morning and retail up to mid day only at the same market center. They are forced either to pay 5 Birr tax for each package of tomato to be retailed or they usually prefer to dump tomato in the market and run away from tax collectors. Unlike, the first type of retailers, permanent

/experienced type of retailers was relatively small in numbers. They usually have legal guarantee and pay tax.

The Tradeoff between Farm Gate Market and Weekly Kobo Markets

tomato value chain. Farmers showed that these traders were the only traders who qfsjpejdbmmz!wjtjuui fn!boe!bctpsc!ui f!njpo t!ti bsf!pg!ui f js!qspevdut/!I px fwfs!71 !boe! 33.33% of the producers complained that dealers were non-reliable and unknown to predict their roles, respectively (Table 4). On the other hand, comparatively, the rest of local traders were less reliable and less capable to absorb the bulk products produced over different production periods. Evidently, only 23.3 % of the total respondents indicated that local traders were reliable, while the rest did not. Similarly, 20%, 36.67%, and 43.3% of the respondents indicated that consumers were reliable, non-reliable and unknown, respectively.

Trust: As the degree of social relations between dealers and experienced traders increase via tomato market, dealers usually may work toward the benefit of traders, hopping to get additional benefit from such traders through pre- calculated and hidden common agreements. If farmers might have relationship with traders, it is based on suspicion rather than trust. Though 70% of the producers implied that Mekele traders were trustful buyers comparatively, most traders deal through dealers in arrangements of lower prices, informal and illegal actions in grading and valuation, delay of transactions and payments, incorrect weighing tools. Out of the total producers, 53.33% indicated that local dealers were low trusted while 43.33 were unable to know dealers action with concrete evidence (Table 4).

Dealers usually try to settle disagreements between buyers and sellers in price setting and transaction scenario through continuing convincing mechanisms and simply making producers as mere price takers. Key informants indicated that, if some dealers accomplish their mission over producers successfully, then they would have additional awards given by buyers without the knowledge of sellers. This implies that, consciously, local dealers play tricky gambling games over producers. Generally, the price and quality regulations were absent in the tomato sub sector. Seasonal price variations of tomato were marked throughout the whole production seasons. Farm gate prices of tomatoes varied between 0.36 and 1.33 Birr/kg in April and August of 2009/10 respectively (Figure 3). The price of tomato increased sharply from April to August and slightly declined back from September to mid November then slightly stable from mid November to mid December. The prices highly fluctuate from mid December on wards

up to May, during which high volume of the product was sold to Mekele buyers. Tomato prices in open markets of Kobo is found to be equal to farm gate price during September to mid December, and then increased from mid December to April. Then both farm gate price and the price at open market highly increased up to August and farm gate prices take over the slightly higher selling price. At farm gate market, traders only paid competitive prices in the time of deficit supply that usually occurred during May to August (Figure 3).

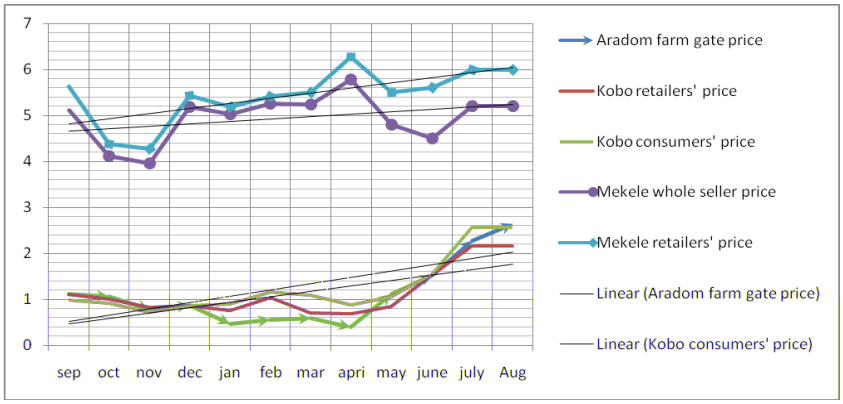


Fig. 3. Tomato price trend in 2009/10 (Source: Own field survey, 2010)

Table 4. Gbsn fst !qfsdfqujpot! po!cfi bwjpst! pgcvzfst! boe! efbmfst **(Source:** Own field survey, 2010)

Indicators	**Major market actors**	**Response**	**Good**		**Bad**				**Rank**
			N	**%**	**N**	**%**	**N**	**%**	
Fair price	Mekele Whole seller	30	10	33.3	9	30	11	36.7	2
arrangement,	Local Retailers	30	8	26.7	7	23.33	15	50	3
governance	Dealers	30	4	13.3	16	53.33	10	33.3	4
	Consumer	30	12	40	4	13.33	14	46.7	1
Reliability	Whole	30	25	83.3	3	10	2	6.67	1
	Retailer	30	7	23.3	13	43.33	10	33.3	2
	Dealer	30	2	6.67	18	60	10	33.3	4
	Consumer	30	6	20	11	36.67	13	43.3	3
Trust	Whole	30	21	70	6	20	3	10	1
	Retailer	30	8	26.7	11	36.67	11	36.7	3
	Dealer	30	1	3.33	16	53.33	13	43.3	4
	Consumer	30	14	46.7	9	30	7	23.3	2
Summed values	Whole	90	56	62.2	18	20	16	17.8	1
(indicator of	Retailer	90	23	25.6	31	34.44	36	40	3
goodness)	Dealer	90	7	7.78	50	55.56	33	36.7	4
	Consumer	90	32	35.6	24	26.67	34	37.8	2
	Total responses	**360**	**118**	**32.8**	**123**	**34.17**	**119**	**33.1**	

Marketing and Price Strategies of Tomato Buyers

Out of the total wholesale respondents, 45.5 and 54.5 % indicated that quality parameters and expected profit margins were the major criteria used to set prices, respectively (Figure 4). Out of the total retailers, 46.4, 14.3 and 39.3% indicated that quality parameters, market prices and profit margins were the determinant factors to buy tomatoes from wholesale traders, respectively. On the other hand, 27.3, 4.5 and 68.2% of the total wholesale traders implied that quality parameters, market prices and profit margin were the major criteria considered to set selling prices. Unlike the buying price criteria, quality parameters become less considered in setting selling prices. For whole sellers, the major criteria considered to set selling prices was profit margins. To the contrary, quality parameter was considered by 57.1% of the total retailer respondents as the major factor to set selling prices while 35.7 and 7.1 % of retailers considered profit margin and market price. Out of the total wholesale respondents, 77.3 and 22.7% indicated that fluctuations of tomato buying price were moderate and very instable respectively (Figure 4). And 75, 14.3 and 10.7% of retailer respondents indicated that tomato-buying price was very instable, instable and moderate, respectively. On the other hand, out of the total whole sale respondents, 50, 36.4 and 13.6 % indicated that fluctuations of tomato selling price was very instable, instable and moderate respectively (Figure 4). Out of the total whole sale respondents, 72.7% of the wholesale and 57.2% of the retailers indicated that there was an imperfect price trend across towns at a particular time. Out of the total respondents whole sellers, 81.8% indicated that supply and demand variations was causes of price fluctuations while the rest implied that market imperfection and information collision were the factors of price fluctuation.

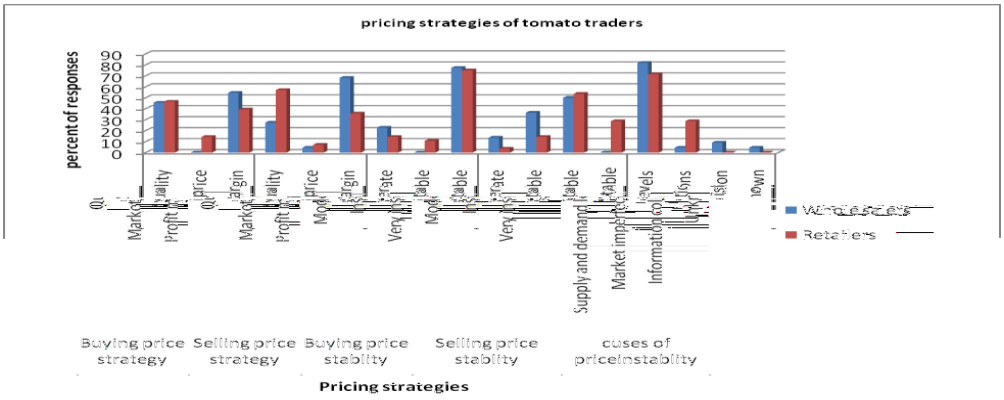


Fig. 4: Buying and selling price of whole sellers and retailers (Own field survey, 2010)

Cost and Benefit Distributions among Tomato Value Chain Actors

For the analysis of cost benefit distribution among actors, the major output channel was considered. Producer-dealer-Mekele large buyers-Retailers. This section focuses the distributions of costs and benefits among the major value chain actors of tomato. Average costs of product loss, labor, inputs, and others constituted 39.84%, 35.15%, 18.71%, 3.35% of the total cost required, respectively. Out of the total costs, product loss was the major cost incurred followed by labor costs (Figure 5). Producers incurred 0.67 Birr to produce and sell a single kilogram of marketable fresh tomatoes to Mekele whole sellers. Production cost covered 17.40% of the total costs required to produce and distRibbute one kilogram of tomatoes to Mekele consumers. As we can see in Figure 5, the remaining 83.60 % (3.18 Birr) of the total cost was costs of distribution, of which 58.96% (2.27 Birr) covered by whole sellers and 23.64 % (0.91 Birr) covered by retailers. This implies a single kilogram of tomatoes took 3.18 Birr to produce and distRibbute to Mekele consumers. On the other hand, a single kilogram of tomatoes gave a net benefit of 1.58 birr, in its path from producers to consumers. Producers obtained a net benefit of 0.21 Birr out of a single kilogram of marketed fresh tomatoes to Mekele whole sellers, this benefit covered 13.29 % of the total net benefits of a kilogram of tomatoes obtained after sold to Mekele consumers. Mekele traders shared the remaining 86.71% (1.37 Birr) of the total net benefit, of which 70.87% (1.12 Birr) and 15.82% (0.25 Birr) of the total net benefits shared by whole sellers and retailers respectively. Much of the benefits accrued to Mekele traders, producers obtained the least benefit out of the total benefits distributed (Figure 5).

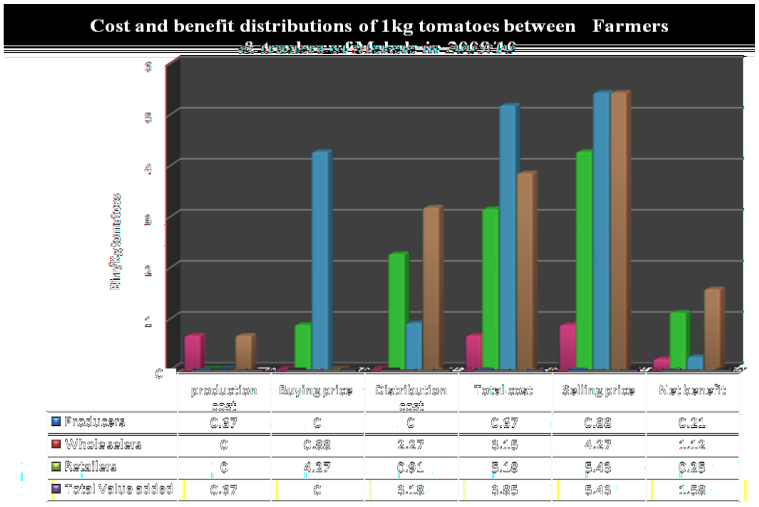


Fig. 5. Cost and benefit distribution (Source: Own field survey, 2010)

Conclusion and Recommendations

Upn bup!qspevdfst!i bwf!fyqfsjfodfe!'n fov!pg!n bsl fuldi bmfohft !c pui !bulgbsn !hbuf!boe! local markets of Kobo town in tomato value chain. Tomato has no organized market structure. Consequently, farmers are forced to sell their product at farm gate to limited major buyers of Mekele traders with little share of local buyers of Kobo. Lack of reliability of local traders may associate with inconsistencies of supply and demand that frequently occurred in local markets of Kobo. Producers obtained a net benefit of 0.21 Birr out of a single kilogram of marketable fresh tomatoes to Mekele whole sellers, while Mekele traders shared the remaining 86.71% (1.37 Birr) of the total net benefit. Absence of effective input and service provision, production planning, lack of markets, low output prices, poor market information management systems made farmers the victims of mono channel marketing system and kept them risk takers of tomato value chain.

The following actions are recommended for effective tomato value chain.

- Improving input and service provision systems both in pre- and post- harvest handling of tomato. Formal input channels should be strengthened by solving problems of delays of delivery, promotion of credit awareness, seed and chemical quality control and granting cooperatives with legal entity. Moreover, inputs introduced by illegal traders and informal sources need to be monitored.
- Encouraging and empowering farmers to help them integrate both to vertical and horizontal activities of production and marketing processes.
- Searching potential markets and strengthening market linkages may improve the market performance and its competences. Creating coordination between producers, local dealers and large traders through forums and discussions is essential to develop common understanding between chain actors for fruitful coordination in the value chain system.

References

Bezabih Emana and Hadera Gebremedhin, (2007). Constraints and Opportunities of Horticulture Production and Marketing in Eastern Ethiopia, DCG Report No. 46, Addis Ababa,

Central Statistical Authority (CSA), (1994). Ethiopia Agricultural Sample Enumeration 2001/02: Result for Amhara region, Statistical Report on Area and Production of Crops, Part IIB, Addis Ababa.

Demelash Seifu, (2003). A review on Agricultural marketing problems and possible solutions in Amhara region, Bahir Dar, Ethiopia.

District Agriculture and Rural Development Office, (2009). Base line data of North Wollo Zone, Amharic version (Unpublished)

District Agricultural and Rural Development Office, (2010). Annual report on the performance of agricultural development, North Wollo zone, Amharic version, (Unpublished)

District Agricultural and Rural Development Office, (2010). Annual report on the performance of agricultural development, Kobo, Amharic version, (Unpublished)

ECA (Economic Commission for Africa), (2009). A Working Document: Developing African Agriculture through Regional Value Chains.

Girma Abera Jibat, (----). Associate Research Officer/Horticulture Research Division, Oromia Agricultural Research Institute.

Lemma Desalegn, (2002). Tomatoes: research experiences and production prospects. Research Report No 5. EIAR, Ethiopia.

MOA (Ministry of Agriculture), (2007). Annual statistic official report on Agricultural Export Commodities, Amharic Version, Addis Ababa.

MOA (Ministry of Agriculture) (2006). Agricultural policies, programs and targets for a plan for accelerated and sustainable development to end poverty (PASDEP) 2005/6-2009/10. Addis Ababa

MOA (Ministry of Agriculture), (2009). A Manual to produce vegetable; RCBP, Addis Ababa, Ethiopia,

www.moard.gov.et, accessed on December 18, 2009

Raphael Kaplinsky and Mike Morris, (2000). A handbook for value chain Research Prepared for the IDRC by for in the Bellagio Workshop, www.centrim.bus.bton.ac.uk/ and on January, 2010

SWHISA, (2007). PRA diagnostic report: On Assessment of Challenges and Opportunities of modern and traditional irrigation schemes of Amhara Regional State: the case of Golina Kobo Woreda., Bahir Dar Ethiopia.

WB, (2005). Background report; Opportunities and challenges for developing high value agricultural report in Ethiopia; A draft document on poverty reduction and economic management, Country department for Ethiopia, African Region.