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Cotton Value Chain Analysis: The Case of Smallholder Farmers Arbaminch Zuria District, Gamo Gofa Zone, Ethiopia

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ABSTRACT

General Objective of study was to evaluate value chain of cotton in the case of Arbaminch Zuria district with specific objectives: to assess performance cotton value chain and identify constraints and opportunities of cotton value chain in the study area. For this study, both primary and secondary data were used. A total of 123 sample households were selected from three kebeles of Arbaminch Zuria district and 26 cotton traders, and one Textile Company were interviewed using semi structured questionnaire. Descriptive statistics models specifically value chain analysis was used to analyze the data. Descriptive statistics results show that the main cotton value chain actors in the study area are input supplier, producers, local collectors, wholesalers, ginners, cottage level weavers, textile factories and retailers.

Long existing tradition of cotton farming and governmental and NGO support were cotton production opportunities while, substituting cotton by other crops, lack of access to new and improved cotton varieties and absence of cotton crop failure insurance were cotton production challenges of the study area. Increased market demand, proximity to and existence of textile factories and establishment of new industry parks were cotton marketing opportunities while, production and supplying of cotton with in similar period, bulkiness, and spoilage, were cotton marketing challenges in the study area.

Provision of new improved cotton varieties, regulation and implementation of cotton price tariffs, strengthening and provision of sustainable and knowledge based extension service were recommended to improve and strengthening cotton value chain in the study area.

Keywords: Cotton, Value Chain, Chain Actors and Arbaminch Zuria.

INTRODUCTION

Cotton is a critical crop for many African countries, and the supply of adapted and quality seed to farmers is essential [1]. Ethiopia is believed to be one of the origins of cotton, and cotton cultivation is deep-rooted in the history of the country's agriculture. It is one of the major cash crops in the country and is extensively grown in the lowlands under large-scale irrigation schemes and also it is grown on small-scale farms under rain-fed agriculture [2]. In Ethiopia, there are three major groups of cotton producers, namely: the smallholder farmers, large state farms and private commercial farms. Cotton produced by smallholder farmers is for the large part used by the hand loom sector [3]. As to total arable and potential area for cotton production, the country is utilizing below potential.

Ethiopia is well endowed with water resources [4]. However, studies indicated that only 2.8%, is utilized for production of cotton. According to ADBG [4], the production cost of Ethiopian cotton is 66.3% that of Chinese cotton, 57.3% that of American cotton, and 90.8% that of Indian cotton. Cotton is grown in many regions in the country. In each region,

there are wide potential areas; in Tigray 269,130 ha, in Amhara 678,710 ha, in SNNPR 600,900 ha, in Oromia 407,420 ha, in Gambella 316,450 ha, in Benshangul 303,170 ha, in Afar 200,000 ha, and in Somali 225,000 ha.

The town of Arbaminch, administrative centre Gamo Gofa Zone, is the second largest cotton production regions in the country after Amhara Region [5]. However, most studies which have been conducted on cotton [2,3,6-8] have focused only on production and marketing aspects and were limited to a specific (Awash Valley, Humera, Metema and Abobo) areas.

Given the economic and social importance of cotton to the country in general and to Arbaminch Zuria District in particular, value chain analysis may contribute to an increase in marketable surplus by scaling-down the losses arising due to inefficient production, processing, storage, and transportation. Because, value chains can be seen as a vehicle by which new forms of production, technologies, logistics, labor processes and organizational relations and networks are introduced [9]. These were the basic reasons why cotton value chain study was conducted in Arbaminch Zuria District. In order to narrow the aforementioned research gaps; the study aimed to evaluate value chain of cotton in the case of Arbaminch Zuria district with specific objectives: to assess performance cotton value chain and identify constraints and opportunities of cotton value chain in the study area.

RESEARCH METHODOLOGY

Description of the study area

Arbaminch Zuria district is one of the districts found in Gamo Gofa zone of the Southern Nation's Nationalities and Peoples Regional State (SNNPRs) (Figure 1). The District is located at a distance of 275 and 505 km from the regional city, Hawassa and the country capital, Addis Ababa, respectively. Geographically, the district is located between 5°42′ and 6°13′ North latitude and 37°19′ and 37°41′ East longitude. The district covers 1001 km² and has twenty nine rural kebeles and one District town. Based on 2007 population census, Arbaminch Zuria district had a total population of 164,529 of whom 82,199 (49.9%) are men and 82,330 (50.1%) are women.

The elevation of the study area ranges from 1200 meters above sea level around eastern part to 3000 meter above sea level in north western part. Eastern part of the study area is dominated by flat lying topography, while the northern and north western parts constitute areas with high altitude.

The study area involves six major types of land use. These are settlement, farmland, water bodies, forest, bush lands and bare lands. Farmland account about 46% of the total area, including two private large farm lands (Amibara Agricultural development plc and Lucy Agricultural development plc.) and farmers owned farm lands. The second dominant land use is bush land area which accounts 34.1%, settlement areas account 12.5%, dense forest of the total area found around the two lakes accounts 5.7%, water bodies accounts 0.85%, and bare lands account 0.85% found in different parts of the district, which is left fallow.

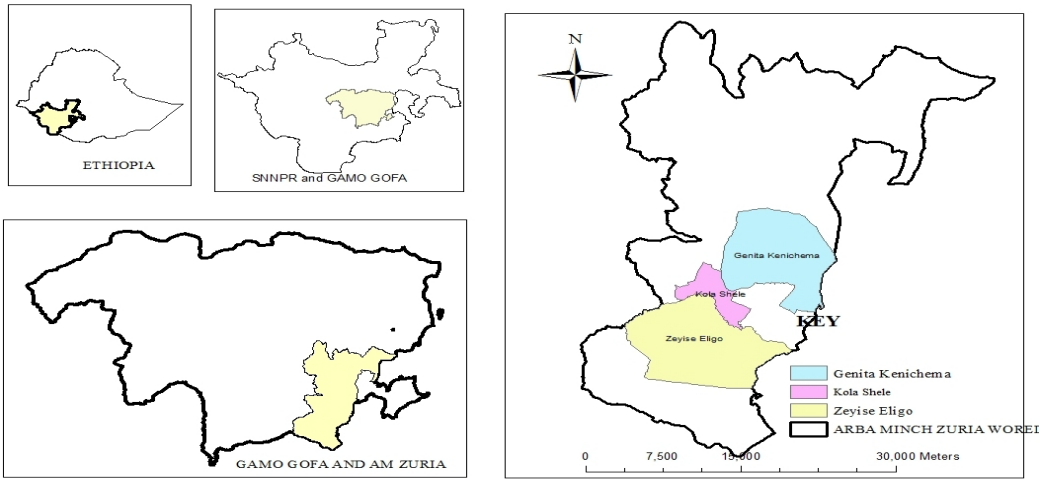

Figure 1: Location map of Arbaminch Zuria district

Types of data, sources and methods of data collection

The primary data were collected using four interview schedules; producers, traders and two for processors using semi-

structured questionnaires. Secondary data were collected from different sources such as from district Agricultural and Natural Resource Development Office reports, textile industry report, Gamo Gofa zone Agricultural and Natural Resource Development department reports, Trade and Industry Offices, bulletins and websites.

Quantitative and qualitative data were collected from respective sources and were used to achieve the proposed objectives.

Sampling procedures and sample size

Two stage sampling procedure was employed to draw representative cotton producer farmers. In the first stage, three kebeles were selected randomly from ten cotton producer kebeles of the study district. In the second stage, households were selected randomly from complete list of households of selected kebeles and sample size was determined according to formula given by [10] at 95% confidence interval with 9% precision level (e)=0.09

$$n = \frac{N}{1+N(e)^2} = \frac{26931}{1+26931(0.09)^2} \approx 123$$

Where n**:** sample size for research use, N: total number of households of the Arbaminch Zuria district and e: designates precision level and ranges from 0.05 to 0.1. For this research e=0.09 was taken as precision level. Because according to [11]. As 'e' gets approaches to 0.05 the sample size gets larger and larger, as a result it becomes difficult to manage. Sample size for each kebele was distributed based on proportional to size of total households.

Based on information obtained from cotton traders Hawassa Textile Share company was interviewed and financial analysis and value addition was conducted.

Trader was sampled from local market called *Kola shelle* market places during pick cotton harvesting period. Market held on weekly basis once every Saturday and farmers supply cotton to this market. All local collectors, wholesaler and retailers were selected using random sampling technique and interviewed.

Methods of data analysis

Value chain analysis: Two types of value chain analysis was conducted namely: Functional **analysis and flow chart**, which Mapping the chain means giving a visual representation of the connections between actors and tracing a product flow through an entire channel from the point of product concept to the point of consumption [12,13]. The flow chart visualizes interactions and flows between agents. It can also be a useful tool in achieving clarity in the subsequent stages of analysis [14-16].

Financial analysis is analyses of the process of value creation and income distribution [17]. Financial analysis was used to determine the monetary value added in the various segments of the chain actors. Total value added of the chain represents all value created by all the agents of the chain [15]. The financial profitability of activities in the chain was analyzed based on the agents' activities using rate of return on investment, their economic results in the form of profits or losses.

RESULTS AND DISCUSSION

Demographic characteristics of respondents

For this study both male headed and female headed sample households were considered during the survey. The total sample size of cotton producer included was survey123. Among total sample respondents, 89.43% were male-headed households and 10.57% were female-headed (Table 1).

Table 1: Sex and education level of sampled household

Variable	Indicator	Frequency	Percent
Sex of sampled household head	Male	110	89.43
	Female	13	10.57
	Total	123	100
Level of education	Unable to read & write	4	3.25
	Grade 1-4	41	33.33
	Grade 5-8	58	47.17
	Grade 9-10	12	9.75
	10^{+1} and above	8	6.5

Total		123	100

Source: own computation, 2016.

Survey result presented in the (Table 2) shows that mean age of sampled traders was 38.26 years and 53.8% of the sample traders were male and 46.2% were female. Among total surveyed traders 73.1% were retailers, 23.1% were local collectors and only 3.8% were wholesalers.

Table 2: Demographic characteristics of sampled traders

Variables	Indicators	Frequency	Percent
Sex of traders	Male	14	53.8
	Female	12	46.2
	Total	26	100
Types of trading	Wholesaler	1	3.8
	Retailers	19	73.1
	Local collectors	6	23.1
	Total	26	100

Source: own computation, 2016.

Access to institutional service of sampled households

Survey result depicted in (Table 3) below shows that 98.4% of sampled households have access to extension service and only 1.6% of sampled households responded absence of extension contact. Also 98.4% of sampled households have access to market information and only 1.6% has no access to market information. Furthermore, survey result shows that on average interviewed households were located around 10.7 km distance from the nearest market ranging from 0.5 km to 16 km.

Table 3: access to institutional service

Variables	Indicators		Frequency		Percent
Have access to extension	Yes		121		98.4
	No		2		1.6
Access to market information	Yes		121		98.37
	No		2		1.63
Distance to nearest market in Km	n	Minimum	Maximum	Mean	Std. Dev
	123	0.5	16	10.7	5.42

Source: own computation, 2016.

Cotton production system and varieties used

The survey result indicated in (Table 4) below shows that all (100%) sampled households use crop rotation pattern and 87% use mono cropping cultivation system for cotton production. Cotton mono cropping system has contributes for cotton quality because cotton fibers traps foreign materials easily when dropped on it and increases the level of foreign material content which result in quality deterioration, but when cotton is cultivated alone it reduces foreign material drop on the fiber of cotton.

Table 4: Cotton land allocation system and cropping pattern

Variables	Indicators	Frequency	Percent
Use of crop rotation	Yes	123	100
Land used for cotton	Maize	123	100
Crops sown after cotton harvest	Maize	95	77.23
	Teff	28	22.77
	Total	123	100
Cropping system	Mono cropping	107	87
	Inter cropping	16	13

Source: Own Computation, 2016.

From 1970 to present year Ethiopian Agricultural Research Institute (EARI) Melka Werer Agricultural Research Center and private companies have released more than 26 improved cotton varieties, but in the study area only 10.57% of surveyed cotton producers used deltapine-90 cotton variety, which was released from Werer Agricultural Research

Center in 1989, which is about 27 years back. And also 8.13% of surveyed cotton producers did not know cotton variety they used. As depicted in the Table 5 below 81.3% of sampled cotton producers uses traders as the seed source and 18.7% used seed from NGOs

Table 5: Cotton varieties cultivated in Arbaminch Zuria district

Variable	Indicators	Frequency	Percent
Use of improved varieties	Yes	23	18.7
	No	100	81.3
Name of varieties used	Local variety	100	81.3
	Deltapine-90	13	10.57
	Not know the name of variety	10	8.13
Source of cotton seed	Traders	100	81.3
	NGOs	23	18.7

Source: Own Computation, 2016.

Cotton production calendar and profitability analysis

In Arbaminch Zuria district cotton farming activities started as early as January with land clearing and preparation. Planting was carried out in April. Weeding activities started during middle of May and continued to the end of September, until the harvest. Harvesting activities starts from early November to half of December when bolls ripen. Harvesting is done traditionally with handpicked in three rounds, which were high labor demanding activities in cotton farming.

Based on the survey data, the costs of production and returns at the current (2016) prices were used to estimate the costs and benefits of cotton production. The labor cost given in (Table 6) was estimated based on wage of labor in the village per man day. Family labor was evaluated at the existing wage rates of hired labor at the village level. The mean productivity of cotton was 1083.6 kg per hectare which was calculated from sampled households' data. Average production cost per 100kg was 637.69 birr and gross profit per 100 kg was 362.31 birr. Average cotton production cost per hectare was 6910 birr and gross profit per hectare was 3926 birr.

Table 6: Cotton farming financial analysis per hectare and per 100kg

No.	Cost items	Cost in ETB	Percent share
1	Labor cost		
	For land clearing	500	7.24
	For plowing and seeding	400	5.79
	For weeding	800	11.58
	For picking/harvesting	2000	28.94
	For packaging	220	3.18
2	Oxen rent	1500	21.70
3	Inputs cost		
	Seed cost	175	2.53
	Chemical (endosulfan)	575	8.32
4	Packaging material cost	500	7.24
5	Transport cost	200	2.9
7	Land tax per hectare	40	0.58
	Average cost per hectare	6910	100
6	Average yield kg per hectare	1083.6	
	Average cost per 100kg	637.69	
	Average sales price per kg(Birr)	10	
	Revenue per 100 Kg	1000	
	Revenue per hectare(Birr)	10836	
	Gross profit per hectare	3926	
	Gross profit per 100kg	362.31	

Source: own computation, 2016.

Cotton value chain actors and their functions

The cotton value chain varies from simple to complex. It can be very simple or short when producers sell directly to textile factories, textile factories sell to garment firms and garment firms directly sell their cotton products to

consumers, or it can be a bit complex when a lot of chain actors were involved. In the case of cotton value chain in Arbaminch Zuria district, chain actors include input suppliers, cotton producers, traders, processors, retailers and consumers. Support institutions include financial or non-financial service providers such as credit institutions, government offices, non-government offices, and research centers. Each of these actors adds value in the process of changing product title. Functions of each actor were discussed in-depth below.

a. Inputs suppliers

These are cotton value chain actors which supply cotton seed, chemicals, farm equipments, nologies to produce seed cotton. Actors who lie in this category are traders, NGOs like; Integrated Pest Management and Technical Vocational and Educational Training Centers (TVETC) and traders.

b. Producers

Smallholder farmers (large in number). To produce quality seed cotton, they perform land preparation, sowing, weeding, chemical spraying, harvesting, storage and transport raw cotton to storage and finally to market.

c. Traders

In the study area traders can be classified into three based on quantity of cotton they handle. Those are local collectors, wholesalers and retailers. Detailed functions of traders are discussed below.

Local collectors**:** small in number, who buys raw cotton from smallholder farmers at local markets and sells to wholesalers at the same market place.

Wholesalers**:** very small in numbers, who buy cotton from smallholder farmers as well as from local collectors and sell after processing or ginning raw cotton into lint and seed. They sell lint for textile factories and seed for oil factories and cotton producer farmers.

Retailers: were individuals who buy raw cotton from smallholders and sell to local level ginneries at different markets in highland districts of Gamo Gofa zone.

d. Processors

Ginneries: Modern level ginners separate seed cotton into lint and seed through contract rental agreement bases with wholesalers. The principal function of the cotton gin is to separate lint from seed and produce the highest monetary return for the resulting lint and seeds. For this study two modern ginneries; Amibara General Aviation and Four –D-ginning factories were included.

Weavers and textile companies: Following the ginning phase, the separated lint and seed gone through a secondary transformation process. The cotton lint goes to textile mills for transformation into yarn, while the cottonseed goes to seed processors for transformation into raw oil and seed cake.

Textile manufacturing refers to the transformation of cotton lint to yarn and fabrics and ultimately to clothing. It includes yarn spinners, fabric and garment producers. For this study Arbaminch and Hawassa textile companies were addressed.

e. Transport and logistics

Both traditional means of transport like donkeys and donkey pulled carts and the modern ones are used to transport raw cotton to producers' house, market place, storage area and to ginners' house. Lorries were commonly used to transport raw cotton to ginners' house and the ginned products to textile factories and warehouses (Figure 2a 2b).

Figure 2: (a) Traditional transportation (b) Modern transportation

f. Consumers

Consumers in cotton value chain ranges from individual to government and non-government institutions. Consumers of cotton product are government offices (hospitals, educational institutions, meeting halls, training centers, health clinics and the like), non-government organizations, hotels, cafeterias, groceries, bar and restaurants, public and private transport agencies, tourists, individuals and communities.

Support institutions

These are government and non-government institutions which enabling and facilitating cotton value chain in the study area. Arbaminch plant clinic and NGOs (Integrated Pest Management) are providing training for cotton producers to produce chemical free cotton. Infrastructure and utilities suppliers including roads, telecommunications and health centers are the basic inputs for the productivity of cotton production and further processing through providing communication facilities and health services.

At national level price of cotton was regulated in collaboration with three Ministers office and one Institute these are: Minster of Agriculture and Natural Resource, Ministry of Industry, Minster of Trade and Textile Industry Development Institute. Minister of Agriculture and Natural resource is responsible for developing policies and strategies and supervising the performance in the development of the sector. Ministry of Industry: develops policies and strategies for the industrialization of the country in general and textile industry in particular. Textile Industry Development Institute supervises the performance of both the cotton production and textile manufacturing industries. Minister of Trade responsible for setting price for cotton, monitoring and supervising implementation of pricing system.

Cotton value chain map of Arbaminch Zuria District

Mapping a value chain helps for clear understanding of the sequence of activities and the key actors and relationships involved in the value chain. A function of value chain mapping is to show the relationships and integrations of the processes and activities performed along the value chain. Major functions of cotton value chain in Arbaminch Zuria district is displayed in (Figure 3) below:-

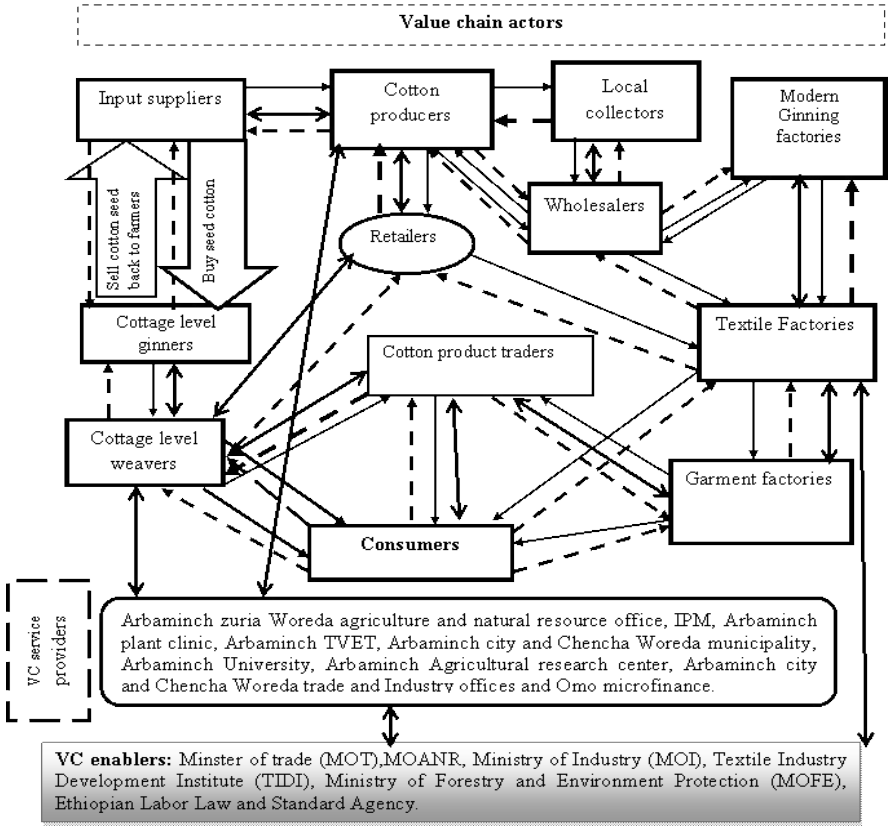

Figure 3: Cotton value chain map of Arbaminch Zuria district
Source: Own sketch from survey result, 2016.

Key: ——→ commodity flow, ←→ information flow, – – –▸ currency flow

Value addition and financial analysis of cotton value chain

Value added refers to the creation of wealth, the contribution of the particular production process, or particular chain and contribution to the growth of the economy [15]. Also value added refers to the contributions of the factors of production, such as land, labor and capital goods to rising value of a product and corresponds to the incomes received by the owners of these factors [17]. From a more focused point of view value added represents the worth that has been added to a product or a service at each stage of production or distribution. An economic agent can calculate the value added as a difference between the full value of the output and the value of the purchased inputs [12]. Based on the aforementioned value added concept and method of value adding calculation, each actors value adding along cotton value chain was calculated and displayed below considering commodity and currency flow linkage and integration.

a. Value added from input supply to raw cotton production

As observed on (Table 6) above average production cost per 100kg was 637.69 birr and gross profit per 100kg was 362.31 birr. Average cotton production cost per hectare was 6870 birr and gross profit per hectare was 3926 birr.

b. Value added from Cotton farm production to traders

Traders of cotton value chain of Arbaminch Zuria district can be classified into three. Namely; local collectors, wholesalers and retailers.

As depicted in (Table 7) below on average local collectors add or cost 1096 birr per 100 kg and selling price was 1150 birr and they captures 54 birr gross profit from 100 kg of cotton.

Table 7: Financial analysis of local collectors

No.	Cost items	Cost per (100kg) in birr	% marketing cost
1	Purchasing Price	1000	91.24
2	Marketing cost		
	Loading and unloading cost	17.5	1.59
	Transport expense	16	1.45
	Store rent	0	0
	Brokerage cost	0	0
	Tax	2.5	0.26
	Cost of packaging material	40	3.61
	Labor cost for packing	20	1.85
	Total cost	1096	100
3	Selling price	1150	
4	Gross profit	54	

Source: Own Computation, 2016.

As depicted in (Table 8) below, wholesalers sell cotton after processing /ginning. Average ginning price per 1kg was 37.5 birr. On average wholesalers add or cost 1575.5 birr per 100 kg cotton. After ginning wholesalers sold lint 36 birr per kg and seed 5 birr per kg. Lint and seed percentage of Arbaminch district cotton was 65 and 35, respectively. Therefore selling price per 100 kg was 2515 birr and they acquire 939.5 birr gross profit per100 kg of cotton.

Table 8: Financial analysis of cotton wholesaler trade per 100 kg cotton

No	Cost items	Cost per quintal		Percent share
1	Purchasing price	1150		72.99
2	Marketing cost			
	Loading /unloading cost	25		1.59
	Transport expense	100		6.34
	Store rent	30		1.9
	Cost of packaging material	150		9.52
	License and Taxes	8		0.52
	Labor cost for Packaging	50		3.17
	Brokerage cost	25		1.59
3	Rent for ginning service	37.5		2.38
	Total cost	1575.5		100
3	Product	%	Selling price in birr	Gross sales
	Lint value in kg	65	36	2340

	Seed value in kg	35	5	175
	Total value after processing	2515		
	Gross profit in birr	939.5		

Source: Own Computation, 2016.

c. Value added from wholesalers to textile factory

As result depicted in (Table 9) below textile factory add 5236 birr including lint cost to transform 100 kg cotton lint in to yarn and fabrics. The included textile factories, Hawassa textile share company, produces two items 75% yarn and 25% fabrics and they sell with different prices, on average yarn is sold of 63.91 birr/kg and fabrics is sold at 25.87 birr/kg. The company achieves 204 birr per 100 kg gross profit, but to conclude either the company was profitable or not it needs further research on wastage level, man/day/product efficiency and others.

Table 9: Hawassa textile company value adding activities and cost-benefit analysis

Value adding activity	Cost category					
	Wage/Labor cost	Spare part cost	Electricity cost	Machine depression cost	Packing material cost	Overhead cost
Spinning	4493641	2207494	624814	1080534		1930914
Doubling		96566	723			175004
Reeling	606632		1659	24723		17764
Knitting	260555	105581	6174	234429		157050
weaving	2437736	182480	302942	13350	111580	979324
Finishing		0	0	0	0	0
Sub-total	7,798,564	2,592,121	936,312	1,353,036	111,580	3,260,056
Grand total						16,051,66[a]
Purchasing price per 100kg						3600[d]
Total output in kg (2008 E.C)						98,0827.2[b]
Total value added birr per kg						16.36[c]
Total value added per 100kg						1636[e]
Items produced		Yarn	Fabrics	Grand total		
Percent		75%	25%	100%		
Selling price(birr/kg)		63.91	25.87			
selling price birr/100kg		4793.25	646.75	5440[f]		
Net profit per 100kg				204[g]		

Source: Own Computation, 2016.

Note: $c = \frac{a}{b}$ $g=f-(d+e)$

d. Summary of value addition and percentage profit share

This summary of value addition and percentage profit share describes chain actors production cost, added values, percentage added cost, percentage of profit share and rate of return in (Table 10) below based integration of chain actors.

Table 10: Summary value addition of farmers to textile factory

Chain actors	Cost per 100 kg			Profits per 100 kg			
	Unit total cost	Added cost	% added cost	Unit price	Gross profit	% Gross profit	Rate of return
Farmers	637.69	637.69	22.80	1000	362.31	22	0.568
Local collectors	10096	96	3.44	1150	54	6	0.05
Wholesalers	1575.5	425.5	15.23	2515	939.5	59	0.59
Textile factory	5236	1636	58.53	5440	204	13	0.04
Total		2795.19	100		1559.81	100	

Source: Own computation, 2016.

As depicted above in the case of farmers => local collectors => wholesalers =>Textile company chain integration farmers receive 0.568 birr return for every 1 birr investment on cotton, local collectors receive 0.05 birr, wholesalers receive 0.59 birr, and textile company receive 0.04 birr for every 1 birr investment in cotton value chain activity, citrus paribus.

Cotton value chain upgrading and governance

According to Kaplinsky and Morris [13] upgrading refers to the acquisition of technological capabilities and market linkages that enable firms to improve their competitiveness and move into higher-value activities. Similarly according to Jonathan *et al*., [18] upgrading is a means of acquiring technological, institutional and market capabilities to improve their competitiveness and move into higher-value activities. In short, upgrading is the process of trading up. In case of cotton value chain in Arbaminch Zuria district there are both process and product upgrading is existed at different cotton chain actors. Cotton producer farmers are acquiring knowledge from Integrated Pest Management (NGO) how to produce organic cotton without using chemicals for pest control and disseminating improved pest resistant varieties. Ethiopian textile industry development institute is providing process performance and product improvement training for textile companies to improve their competitiveness in local and global market.

Value chain governance is authority and power relationships that determine how financial, material, and human resources are allocated and flow within a chain [19]. Cotton is an industrial crop and its price and quality issues are determined by global standards and markets. In Ethiopia price of cotton was regulated in collaboration with three Ministers office and one Institute these are: Minster of Agriculture and Natural resource, Ministry of Industry, Minster of Trade and Textile Industry Development Institute, in the case of Arbaminch Zuria district cotton value chain is governed by traders especially wholesalers govern cotton pricing.

Challenges and opportunities of actors along cotton value chain

Through conducting focus group discussion with different chain actors the following cotton production and marketing opportunities and constraints were identified**.**

Cotton production opportunities

High potential for increased cotton yields there is suitable climate and access to irrigation water in cotton producing kebeles of Arbaminch Zuria district. Cotton yields high when it is cultivated in irrigation than rain fed. There is long existing tradition of cotton farming, in the study area according to Merima and Gezahegn [20] once in history Arbaminch Zuria district was called the cotton belt in Ethiopia. This implies that promotion of new varieties and agronomic practice will not take time and energy. Also there are governmental and non-government organization (IPM) working with cotton producing farmers to help them to produce organic cotton using non-chemical pesticides controlling mechanism. Existence of basic infrastructures like all-weather road, telecommunication and market access help cotton producing farmers to engage in cotton production and to create market linkage.

Cotton production challenges

The area is losing its originality of cotton production due to obstacles faced by substituting other cash crops like banana and food crops like teff and maize. Because cotton harvesting requires a lot of investment and intensive care throughout its cultivation period, there is a trend to shift from cotton to other less time and money consuming and less risky cash crops. Cotton is susceptible to many pest attach like cotton white fly, cotton jassid, African ball worm and cotton aphid are common cotton pests in Arbaminch Zuria district and the cost of chemical become higher and higher. Also dependence on small-scale, non-irrigated and traditional cotton production system. Lack of access to new and improved cotton varieties, resulted in limited investment in the supply of new and improved varieties to enhance productivity. Only one improved cotton variety, Deltapine-90, which was released in 1989, was known in the district. These have lead farmers to access seeds from open market which is not certified, and tested. Also there is no cotton crop failure insurance in the study area.

Cotton marketing opportunities

Cotton marketing opportunities of Arbaminch Zuria district are: increased market demand for cotton by domestic and foreign textile companies. Proximity to and existence of textile factories nearby (Arbaminch and Hawassa textile factories) and establishment of industrial park at Hawassa town and access to key market and main roads connecting to Addis Ababa are some of existing and coming cotton marketing and production opportunities of Arbaminch Zuria district.

Cotton marketing challenges

Cotton producer farmers produce and supply cotton at the same time, cotton become excess especially during the months (October and December) as compared to demand leading to lower producer price associated with cotton bulkiness, color change, spoilage and seasonality in production. Moreover, weight cheat was a common practice and market power was taken by the traders. In case of cotton producer farmers, some of them adulterate cotton by adding

water, mixing stone and course-soil with cotton especially when they supply in large quantity.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Major functions of cotton value chain actors in Arbaminch Zuria district include input supply, raw seed cotton production, trading raw seed cotton and cotton products, processing of raw seed cotton to transform into different products and consumption.

Value addition was undertaken when cotton goes through different chain actors. In Arbaminch Zuria district cotton producer farmers on average added or cost 637.69 birr per 100 kg raw cotton and acquire 362.31 birr per 100 kg gross profit. Local collectors cost 1096 birr per 100 kg and get gross profit of 54 birr per 100 kg. On average wholesalers cost 1575.5 birr per 100 kg and get gross profit of 939.5 birr per 100 kg of cotton. Textile factory add 5236 birr including lint cost to transform 100 kg cotton lint in to yarn and fabrics and get gross profit of 204 birr per 100 kg lint.

High potential for increased cotton yields, long existing tradition of cotton farming, governmental and non-government organization support and existence of basic infrastructures were seen as cotton production opportunities while substituting cotton by other cash crops like banana and food crops like teff and maize, dependence on small-scale, non-irrigated and traditional cotton production system, lack of access to new and improved cotton varieties and absence of cotton crop failure insurance were seen as cotton production related challenges of Arbaminch Zuria district.

Increased market demand for cotton, proximity to and existence of textile factories nearby, establishment of industrial park at Hawassa town and access to key market and main roads connecting to Addis Ababa and Hawassa were seen as cotton marketing opportunities while production of cotton at the same time and the supplying it with in similar period, bulkiness, color change, spoilage, seasonality of cotton, weight cheat and quality adulteration were seen as cotton marketing challenges of Arbaminch Zuria district.

Recommendations

Based on result of this study, the following recommendations were made.

Agricultural offices, Universities and research institutions should pay attention for provision of improved, high yielding and diseases resistant cotton varieties because majority of sampled households were not use improved cotton varieties. Production, productivity and sustainability of cotton production requires the presence of good extension services, seed supply and quality inputs.

Land use plans and resource allocation system of cotton producers' farmers need to be monitored. Agricultural offices should create awareness among farmers to delegate appropriate land for cotton and to produce in irrigation as of other crops.

National and regional governments may pay attention for not only for establishment of new industry parks, but also strengthen the existing textile factories to he help them to absorb quantities of cotton produced by cotton producer farmers.

Agriculture and natural resource offices, trade and industry offices should work for the regulation and implementation of cotton price tariffs and production related polices. At national level price of cotton was determined by Minster of Agriculture, Minister of Industry, Minster of Trade and Textile Industry Development Institute, but in the case of Arbaminch Zuria District wholesalers were determining cotton price which not benefiting all chain actors equally.

Cotton value chain should be developed in the study area survey result shows that only wholesalers and retailers marketing system was efficient and marketing extra benefits, while other chain actors were not. Value development has power to alleviate cheat and quality adulteration among chain actors and build trust within chain actors.

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