

GENDER ROLES IN THE TOMATO VALUE CHAIN: A CASE STUDY OF KILOLO DISTRICT AND DODOMA MUNICIPALITY IN TANZANIA

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ABSTRACT

Although agricultural value chain interventions are implemented they don't take into consideration different gender categories in the chain. This has partly contributed to failure by many interventions to increase agricultural production. It has also attributed to lack of enough information on gender roles in the agricultural value chain. A study was conducted to assess gender roles in the tomato value chain in Kilolo District and Dodoma Municipality in Tanzania. The study employed a cross sectional research design to collect data from 120 respondents. Key informants interviews and observations were used to supplement the collected data. The statistical package for social sciences was used to analyze data. In both study areas the identified actors were input suppliers, producers, transporters, coolies, brokers, traders and consumers. Box/crate/tenga makers were identified in Kilolo District but not in Dodoma Municipality. Different gender categories like youth, middle and old aged people of both sexes play different roles in the tomato value chain including input supplying, production, transportation and marketing. Middle-aged males followed by females of the same category perform more than half of the roles in the chain. It is recommended that interventions aimed at improving tomato production should focus more on the identified gender categories.

Key Words: Gender, Roles, Value chain, Tomato.

1. INTRODUCTION

In Tanzania agricultural production is normally done by different gender categories including youth, adults and old aged people of both sex categories (Feldstein & Poats, 1989). According to Tibaijuka (1994) men are primarily responsible for most of cash crop production while women play a minor role in most aspects of cash crop production activities, especially weeding. Women are responsible for nearly all aspects of cultivating food crops like maize, paddy, beans, groundnuts, bambara nuts, millet, cassava, cocoyam and yam.

In Tanzania studies show that women produce 60 to 80 percent of the food produced in the country (Momsen, 1991; Mehra & Rojas, 2008). The youth as another important gender category have been engaged in production and economic activities in the sector of agriculture, fishing, animal husbandry and selling fruits and various foodstuffs depending on the geographical place, age, sex, and natural resources available (United Republic of Tanzania - URT, 1996).

Massive efforts and resources have been spent on improving agricultural production, productivity and promoting market access by smallholder producers (Nang'ole, Mithöfer & Franzel (2011). The Tanzania Government has adopted a multi-pronged approach and

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developed a number of programs. These include Agricultural Sector Development Programme (ASDP) and the current agricultural development initiative ‘*Kilimo Kwanza*’ or Agriculture First (URT, 2010). These initiatives comprise of both policy instruments and strategies designed to transform the agricultural sector. One of these strategies is the use of value chain approach, which is anticipated to help different gender categories involved in agricultural production and productivity to gain access to local, regional, and global market niches (URT, 2010).

Value chain in agriculture identifies the set of actors and activities that bring a basic agricultural product from production in the field to final consumption, where at each stage value is added to the product. According to International Fund for Agricultural Development - IFAD and United Nations Environment Programme - UNEP (2013) these stages are; (1) Pre-production (research and development, input supply, production planning); (2) Production (production in the field); (3) Post-harvest and Marketing (transportation, storage, processing, packaging, certifying, distributing, wholesaling and retailing to the consumer). Therefore value chain is a network of various actors involved in the mentioned stages and these include but not limited to input suppliers, producers, transporters, traders and consumers (Food and Agriculture Organization - FAO, 2005).

Researches show that the emergence of agricultural value chains has improved linkages between buyers and poor farmers in the developing countries, which have turned out to be beneficial for the smallholders (Dries; Reardon; & Swinnen, (2004); Minten, Randrianarison, & Swinnen (2007); Maertens & Swinnen, 2006; BIRTHAL, Joshi, & Gulati (2007). In realization of this, the value chain approach has been adopted by many development organizations, non-governmental organizations (NGOs), research institutions and programmes. These include Vredeseilanden Country Office (VECO), Food and Agriculture Organization of the United Nations (FAO), International Fund for Agricultural Development (IFAD) and Plan International (Match Maker Associates - MMA, 2012). Other development programs that employ value chain approach include Enhancing Pro-poor Innovation in Natural resources and Agricultural Value chain (EPINAV), a program funded by Norwegian government and jointly implemented by Sokoine University of Agriculture (SUA) and other partner universities in Norway namely, the Norwegian University of Life Sciences (UMB) and Norwegian College of Veterinary Science (NVH).

Although many agricultural value chain interventions are commonly designed and implemented they don't take into consideration gender roles (Mdoe, Nombo & Jeckoniah (2013). Therefore gender issues like division of labour and decision making by gender in the value chain are not considered (Gabriel, 1989; Wambura, 1992). As a result of this, different gender categories that are important in value chain are neglected. This has partly contributed to failure by many interventions to increase agricultural production and productivity despite of numerous efforts being made (Nang'ole *et al.*, 2011). In addition failure to consider gender roles in the value chain has attributed to lack of enough information on gender roles in the agricultural value chain. Literature shows that there is a wealth of information on gender roles in agricultural production but there is little information on gender roles in agricultural value chain (Karlsruher Institut für Technologie - KIT, Faida Mali and International Institute of Rural Reconstruction – IIRR, (2006); Lastarria, 2006; World Bank and IFAD, 2008; Laven, Van Eerdewijk, Senders, Van Wees & Snelder, 2009; Coles and Mitchell, 2011; KIT *et al.*, 2012 and Boserup, 1970). A study was therefore conducted to assess gender roles in the tomato value chain in order to fill the identified gap.

Understanding of gender roles in the tomato value chain will help researchers and other stakeholders like policy makers and development planners to concentrate more on different gender categories that are actively involved in improving tomato production and productivity. In addition the understanding will assist to generate more information on gender roles in the value chain and fill the identified knowledge gap.

2. METHODOLOGY

The study was conducted in Kilolo District and Dodoma Municipality in Tanzania. In Kilolo District the study was conducted at Ikokoto village while in Dodoma Municipality the study was conducted at Mbabala “A” village. The two villages were selected due to their potential in tomato production and availability of various actors in the tomato value chain.

The study employed a cross sectional research design, which according to Babbie (1990) it allows collection of data at a single point in time. The design is also used for a descriptive study as well as for determination of relationships between variables. Moreover, the design is suitable because it is fast and can accommodate a large number of study units at a relatively low cost (Casley & Kumar, 1988). The target population of this study was different actors in tomato value chain taking into consideration of their gender. In each District one village was purposively selected due to its potential in tomato production and availability of various actors in the tomato value chain. In order to identify various actors involved in tomato value chain in the study areas various methods were employed like review of project reports, key informants interviews and observations.

Based on the available list of potential actors in the tomato value chain in both villages, respondents were randomly selected along the value chain proportion wise based on their number in the chain. Sixty (60) respondents were selected from each village making a total of 120 respondents from both villages. Table 1 summarizes the number of respondents selected for interview. According to Matata, Anandajayasekarani, Kiriro, Wandera & Dixon (2001) a sample size ranging between 80-120 respondents is adequately enough to carry on socio-economic studies in Sub-Saharan Africa.

An interview schedule comprising of both open and closed ended questions was used to solicit quantitative data on gender roles in tomato value chain whereas a check list was used to collect qualitative data through key informant interviews and observations. An interview schedule was tested before actual data collection. The pre-testing was done in Ilula-Mwaya village in Kilolo District and Mpunguzi village in Dodoma Municipality, which are outside of the study areas where randomly selected 10 respondents in each village were interviewed. The pre-testing of the interview schedule was necessary to check validity, reliability and practicability of the instrument (Kothari, 2006). After pre-testing, the instrument was revised to address identified deficiencies. Enumerators were trained before and during pre-testing of the research instrument. Secondary data were obtained from various sources including Dodoma Municipality and Kilolo District Council Offices, journals, websites and Sokoine University of Agriculture Library (SNAL).

Table 1: Respondents involved in the study

Actor	Ikokoto village			Mbabala A village		
	Male	Female	Total	Male	Female	Total
Input suppliers	3	1	4	2	1	3
Producers	12	17	29	19	15	34
Box and basket (<i>tenga</i>) creator	5	2	7	1	2	3
Extension officer	1	1	2	1	1	2
Transporters	3	2	5	2	5	7
Traders	4	5	9	3	4	7
Consumers	2	2	4	2	2	4
Total	30	30	60	30	30	60

The collected primary data were coded, entered and analyzed using the Statistical Package for Social Sciences (SPSS) computer programme. Descriptive statistics such as frequency and percentages were calculated to determine distribution of the study variables. The cross tabulation was performed to segregate roles done by different gender categories in the tomato value chain.

3. RESULTS AND DISCUSSION

This section presents the study results, which are discussed under two main sections. The first section describes the identified actors in the tomato value chain while the second section discusses the roles of different gender categories in the tomato value chain.

3.1 Actors in Tomato Value Chain

The common known actors in agriculture value chain are input suppliers, producers, transporters, traders, market dealers and consumers (KIT, Faida Mali & IIRR, 2006). However the number of actors in the specific chain varies according to the nature of the crop under investigation. During the Focus group discussion and key informants interviews the respondents were therefore requested to indicate the main actors involved in the tomato value chain in their area. In both study areas the identified actors were input suppliers, producers, basket or *tenga* creators, transporters, coolies, middlemen, traders and consumers. Box/crate makers were regarded as being important at Ilula Village in Kilolo District but not at Mbabala A in Dodoma Municipality.

3.2 Gender roles in the tomato value chain

The identified actors in the tomato value chain served as a basis for understanding roles performed by different gender categories in the tomato value chain. The main identified roles and discussed in this paper include supplying inputs, production, grading and packaging, box/crate/basket or *tenga* making, transportation, loading and unloading, brokering,

marketing and consumption. The identified gender categories who play different roles in the tomato value chain in the study area were children, youth, middle and old aged people of both sex categories whose ages ranged from ≤ 17 years, 18-35 years, 36-55 years and ≥ 56 years, respectively. The following sections give explanations of each indicated role and the respective gender category responsible.

3.2.1 *Supplying inputs*

Input supply is an important activity in the value chain of any particular crop. In agriculture the word input refers to a range of materials, which may be used to enhance agricultural productivity. Agricultural inputs are supplied by specialized companies and institutions, while other inputs are obtained from small retail agro-vet shops mostly found at ward and district headquarters. The major input suppliers identified in the study areas were retailers who operate at the village, ward, district and municipal levels. The major inputs that were supplied for tomato production in the study areas included improved tomato seeds, fertilizers, and pesticides. The respondents were therefore requested to indicate different gender categories involved in supplying inputs that are important in tomato production in the study areas. The study results summarized in Table 2 show that, the majority of input suppliers in both study areas were middle aged males reported by 49 (81.7%) and 57 (95%) of the respondents from Ikokoto and Mbabala “A” villages, respectively. Middle aged females in both study areas were also engaged in input supplying although their number was less than that of their counterpart, middle aged males. It was noted that other gender categories like youth and old aged category were not involved in supplying inputs in both study areas. These study findings are in line with what was reported by Jeckonia, Nombo & Mdoe (2012) who found that input supply is dominated by men who can easily travel long distances to purchase them from whole sellers located in urban areas. However, with the present mobile phone services such as M-Pesa or Airtel Money, such roles may change as increasingly, input dealers do not have to travel but make orders for such inputs and send money via mobile phone and the inputs are delivered to the dealer.

3.2.2 *Production*

Production forms an important component of any crop value chain (International Food and Agribusiness Management Association - IFAMA, 2011). During the interview with key informants it was reported that in both study areas tomato production is dominated by middle and high-income earners due to high costs involved in tomato production. It was also revealed during the interview with all respondents that tomato production in both study areas is dominated by middle aged male farmers. Middle aged female farmers were also reported by 42% and 52% of the respondents from Ikokoto and Mbabala A villages, respectively as another gender category involved in tomato production (Table 2).

It was also reported that about 20 (33.3%) and 9 (15%) of youths aged between 18 and 35 years from Ikokoto and Mbabala A villages, respectively were engaged in tomato production. It was further revealed that old aged farmers and children less than 18 yrs were not involved in tomato production in both villages as shown in Table 2 probably due to high costs associated with tomato production. A higher involvement of men in tomato production than women is due to the fact that men mostly engage in producing more paying cash crops than women who engage in the production of less paying subsistence crops (Amri and Kimaro, 2010).

Table 2: Different gender categories involved in supplying inputs, production, grading and packaging (n=120)

Role	Location	Gender categories	Frequency	Percent
Supplying inputs	Ikokoto	Middle aged male (36-55 yrs)	49	81.7
		Middle aged female (36-55 yrs)	28	46.7
	Mbabala A	Middle aged male (36-55 yrs)	57	95
		Middle aged female (36-55 yrs)	23	38.3
Production	Ikokoto	Middle aged male	60	100
		Middle aged female (36-55 yrs)	25	41.7
		Male youth (18-35Yrs)	15	25
		Female youth (18-35Yrs)	5	8.3
	Mbabala A	Middle aged male (36-55 yrs)	60	100
		Middle aged female (36-55 yrs)	31	51.7
		Male youth (18-35Yrs)	7	11.7
		Female youth (18-35Yrs)	2	3.3
Grading and Packaging	Ikokoto	Male youth (18-35Yrs)	57	95
		Female youth (18-35Yrs)	3	5
	Mbabala A	Male youth (18-35yrs)	60	100
		Female youth (18-35yrs)	0	0

3.2.3 Grading and packaging

Grading and packaging of tomato are again important activities performed in the tomato value chain. The sorting and grading is normally done according to customer quality specifications in different markets. It was therefore the interest of this study to investigate various gender categories involved in grading and packing of tomato in the surveyed areas. The results in Table 2 show that all respondents 100% from Mbabala A village indicated that grading and packaging was the duty of male youths. On the other hand the majority of the respondents from Ikokoto village (95%) informed that grading and packaging was conducted by the same gender category. This implies that male youth are the most responsible persons in grading and packing tomato in both study areas. This is in line with Mdoe *et al.*, (2013) who reported that grading and packing of crop products are activities that are dominated by men.

3.2.4 Making box, crate and basket (*tenga*)

Box, crates, and baskets (*tengas*) are special containers, which are commonly made for packaging tomatoes ready for transportation to the market place. As reported earlier wooden crates are commonly used in Ikokoto village while *tengas* are commonly used in Mbabala A village irrespective of a Tanzania parliamentary Act of 2003 that banned packaging materials like *tengas* that create wastes (URT, 2003). Due to the importance of this activity in the tomato value chain it was also of interest in this study to understand various gender categories that are engaged in making boxes, crates and *tengas*. Study results in Table 3 show that all the respondents in Ikokoto village 100% reported that box and crate making was the duty restricted to male youths. Not a single gender category in Mbabala “A” village was

indicated to have been involved in the same activity. The respondents from Mbabala A reported that box and crate are not made in their area due to lack of materials and technical knowhow to make them and therefore the commonly used packaging materials were *tenga* purchased from other areas.

Table 3: Different gender categories involved in making box/crate/*tenga*, transportation and Loading & unloading (n=120)

Activity	Location	Gender categories	Frequency	Percent	
Making box/ crate/ Tenga	Ikokoto	Middle aged male (36-55yrs)	0	0	
		Middle aged female (36-55yrs)	0	0	
		Male youth (18-35 yrs)	60	100	
	Mbabala A	Old male (≥ 56 years)	0	0	
		Old female (≥ 56 years)	0	0	
		Middle aged male (36-55yrs)	0	0	
Transportation	Ikokoto	Middle aged male (36-55yrs)	51	85	
		Middle aged female (36-55yrs)	24	40	
		Male youth (18-35 yrs)	18	30	
		Female youth (18-35 yrs)	5	8.3	
	Mbabala	Middle aged male (36-55yrs)	54	90	
		Middle aged female (36-55yrs)	17	28.3	
		Male youth (18-35 yrs)	15	25	
		Female youth (18-35 yrs)	3	5	
	Loading and Unloading	Ikokoto	Middle aged male (36-55yrs)	24	40
			Middle aged female (36-55yrs)	0	0
			Male youth (18-35 yrs)	53	88.3
		Mbabala A	Middle aged male (36-55yrs)	12	20
Middle aged female (36-55yrs)			0	0	
		Male youth (18-35 yrs)	39	65	

3.2.5 Transportation

Transportation is another important activity in the tomato value chain taking into consideration of the perishability of tomatoes. This involves movement of tomatoes from the point of production to consumption points, that is, from farms and storage places to marketing centres. This is normally done by using different transportation means like animal carts, bicycles, motorcycles, cars and trucks. The respondents were requested to indicate different gender categories involved in transportation of tomatoes. The results summarized in Table 3 show that the majority of respondents 85% and 90% in Ikokoto and Mbabala A villages, respectively indicated that the major players involved in transportation of tomatoes were middle aged males, middle aged women and the minority of youths. It was further reported by key informants that women are mainly involved in transportation of tomatoes from fields to homes by head loading while men transport from homes to market by using motorcycles, cars and trucks. This might be due to the fact that transportation is mainly linked to tomato marketing, which most men tend to dominate. The study results are in line

with Mdoe *et al.*, (2013) who contends that more men than women are involved in transportation of agricultural crops from villages or farms to urban markets.

3.2.6 Loading and unloading

Loading and unloading is another important activity in the tomato value chain. In the study areas people who call themselves “coolies” carry out this activity. For effective performance of their activities they have formed “collies” associations. It was reported by key informants that loading and unloading is one of activities that lead to additional tomato costs as people who engage in the activity are paid for the job. In both study areas respondents were requested to indicate different gender categories involved in loading and unloading tomatoes. The results presented in Table 3 show that the majority of the respondents 88.3% and 65% reported that the loading and unloading activity is dominated by male youth in Ikokoto and Mbabala “A” villages, respectively. Middle-aged males were also reported by 40% and 20% of the respondents in Ikokoto and Mbabala “A” villages, respectively. High involvement of youth in loading and unloading of tomatoes is due to the fact that, these are masculine activities which need to be done by more energetic individuals which in most cases are youth and middle aged males (Robinson & Kolavalli, 2010).

3.2.7. Brokering

A broker or middleman is a dealer, agent or company intermediate between the producer of goods and the retailer or consumer. Therefore a broker or middlemen act as intermediaries or agents between two parties (<http://www.ask.com/question/what-is-role-of-middleman-in-marketing>). In this study middlemen are regarded as all people who play intermediary role between producers and traders in the tomato value chain. It was therefore interesting during the survey to understand which gender categories served as brokers in both study areas. The study findings indicated in Table 4 reveal that middle-aged males and females as well as youth of both sexes performed middlemen activities in both study areas. The majority (88.3%) of respondents in Mbabala A reported that the majority of middlemen were middle-aged males. On the other hand respondents in Ikokoto 58.4% and 33.3% pointed out middle-aged males and male youth as gender categories that served as middlemen. It was interesting to note that middle aged females in both study areas were mentioned by some respondents 26.7% and 15% in Ikokoto and Mbabala A villages, respectively to be engaged in middlemen activities. It was further reported by one of the key informants in the study area that “*in the past, middlemen activities were dominated by men only, but with changing gender roles, some women are currently getting interested and involved in undertaking middlemen activities*”. The study findings are in line with Kanyenze, Kondo & Martens (2006) who contend that men mainly dominate middlemen activity but women are also involved in this activity.

3.2.8 Marketing

Marketing can be visualized as a process in which ownership of goods is transferred from sellers to buyers who may be final consumers or intermediaries (Kotler & Armstrong, 2003). The transfer of ownership is through exchange of goods to goods or goods to money. Tomatoes in Tanzania are traded in different markets, which include local village markets, supermarkets in urban areas, regional markets, national markets and export markets (MMA, 2012). Each market usually represents different customers who demand different qualities of tomatoes. During the survey respondents were requested to indicate different gender

categories involved in tomato marketing. According to Table 4 respondents in both villages reported that marketing is carried out by middle aged males and females, as well as small number of male and female youths. Among these, middle aged male were reported by the majority (70%) and 75% of the respondents as an important group that dominate marketing activities in Ikokoto and Mbabala A villages, respectively. These findings are in line with Jeckoniah *et al.*, (2012) who contend that in Tanzania women dominate agricultural production but men mainly carry out marketing.

Table 4: Different gender categories involved in brokering and marketing and (n= 120)

Activity	Location	Gender categories	Frequency	Percent	
Brokering	Ikokoto	Old male (\geq 56 years)	10	16.7	
		Middle aged male (36-55yrs)	35	58.4	
		Middle aged female (36-55yrs)	16	26.7	
		Male youth (18-35 yrs)	20	33.3	
	Mbabala A	Old male (\geq 56 years)	27	45	
		Middle aged male (36-55yrs)	53	88.3	
		Middle aged female (36-55yrs)	9	15	
		Male youth (18-35 yrs)	17	28.3	
Marketing	Ikokoto	Middle aged male (36-55yrs)	42	70	
		Middle aged female (36-55yrs)	30	50	
		Male youth (18-35 yrs)	16	26.7	
		Female youth (18-35 yrs)	4	6.7	
		Mbabala A	Middle aged male (36-55yrs)	45	75
			Middle aged female (36-55yrs)	25	41.7
			Male youth (18-35 yrs)	12	20
			Female youth (18-35 yrs)	5	8.3

3.2.9 Consumption

All the respondents from both study areas indicated that tomato is consumed by all gender categories, namely children, youth, middle and old aged group of people of both sex categories. It was further informed during the interview with key informants that different people including rich, middle-income earners and poor people consume tomato. This implies that tomato is one of the most important horticultural crops that are consumed by different gender categories as supported by the International Food Policy Research Institute (IFPRI, 2005).

4. CONCLUSIONS AND RECOMMENDATIONS

In both study areas the identified actors were input suppliers, producers, transporters, coolies, brokers (middlemen), traders and consumers. Box/crate/basket (*tenga*) creators were regarded as being important at Ilula village in Kilolo District but not at Mbabala A in Dodoma Municipality. It can be therefore concluded that in agriculture there is a possibility of the same crop to have different actors involved in the chain depending on the area of operation. The analysis of value chain actors for a specific crop in a certain area is crucial in order to identify and involve important actors in planning agricultural development interventions.

Different gender categories play different roles identified in the tomato value chain in both study areas. These include youth, middle and old aged people of both sex categories. Middle-

aged males followed by females of the same category seem to perform more than half of the roles in the tomato value chain. Youth form the other gender category that is important in the tomato value chain. It is therefore recommended that any intervention aimed at improving tomato production and productivity should focus more on the identified categories that are important in the chain.

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