A RECONNAISSANCE STUDY OF THE CITRUS VALUE CHAINS IN TANGA REGION, TANZANIA

A Research Project Submitted to Larenstein University of Applied Sciences in Partial Fulfillment of the Requirements for the Degree of Masters in Agricultural Production Chain Management, specialization Post Harvest Technology and Logistics

By

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DEDICATION

This thesis is dedicated to my parents, Mr. Jiantang Tu and Mrs. Yuzhen Cui who taught me that working hard is the way to success. Also this thesis is dedicated to my husband Mr. Wen Cao and draught Miss. Jianing Cao who supported and encouraged me during my study both financially and spiritually.

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LIST OF ABBREVIATIONS

FAO	-	Food and Agriculture Organization
UNIDO	-	United Nations Industry Development Organization
TABOGCL	-	Tanga Association of Best Orange Growers Co. Ltd.
TCCIA	-	Tanzania Chamber of Commence Industry and Agriculture
MITM	-	Ministry of Industry, Trade and Marketing
HACCP	-	Hazard Analysis and Critical Control Points
ISO	-	International Organization for Standardization
TRA	-	Tanzania Revenue Authority
Tshs	-	Tanzania Shillings

ABSTRACT

This study examines the domestic and international orange value chains within Muheza district, Tanzania. The thesis was conducted as part of a project examining the fruit farming systems and the value chains that they supply with raw material . The research though a field study conducted into the region, collected empirical data concerning the orange value chains from different chain actors within Tanga. By examining the sector it clarifies the process by which the physical flow of oranges move within the value chain, the marketing alternatives to farmers, constraints faced and the gross margins for the different actors in the chain. The study considers the constraints within the current value chain and offers an analysis of the marketing channels for harvested oranges. Two major research strategies were employed: (1) a quantitative analysis of trader data through a mini survey of 20 traders and (2) three case studies. Additional data was collected from published literature and interviews.

The data collected was analyzed using tables generated from the findings. Descriptive statistics was used to compare the margins earned by each actor in the value chain system. Value chain analysis tool was used to describe the functions/roles of the actors and PESTE employed to identify the business environment within Muheza. The findings of the research were used in formulating a new proposed value chain for the orange sector in Muheza that would enable efficient handling of oranges and orange products from the primary producers in Tanga region to the local or international markets.

Keywords

Orange, Value chain system, Muheza district,

CHAPTER 1 INTRODUCTION

1.1 Background of the Study

In 2007, an internationally active juice and fruit trader company visited Tanga region in Tanzania to investigate the possibility of engaging into the citrus fruit value chain within the region. Initial consultations with the various value chain stakeholders in Tanga region reinforced the idea that a major development in citrus and pineapple production within the area is feasible. However the information that was gained at this initial stage was limited in regards to how the value chains in the district operate and the domestic social political influences of different stakeholders on the Tanga value chain. The internationally active juice and fruit trader company therefore deemed it important to carry out a reconnaissance study on the citrus and pineapple value chains in Tanga in regards to obtaining a more clear understanding on selected issues of importance.

Hence two professional master's students from Van Hal Larenstein, University of Applied Sciences were engaged to conduct a reconnaissance research on the citrus of Tanga region. One focused on the orange chain development, another one focused on the farm production planning so as to produce detailed information concerning the fruit business within Tanga region.

1.2 Research Problem

In Tanga region, citrus traders market their produce through two different value chain systems i.e. the domestic and export value chains. The export value chain differs from the domestic chain in that it demands fruits of a higher quality and the traders involved require more logistical resources. However the export value chain system offers higher price for the produce offered on sale in relation to the domestic value chain. Based on the current high citrus production and a rapidly developing international fruit trade business in Tanga, an international juice and fruit trader company is interested in investing within the citrus business in Tanga region. However insufficient information is available about the citrus value chain system in Tanga region to enable a critical analysis of a potential investment into the industry hence need for the study.

1.3 Research Objective

To propose a system for efficient handling of oranges and orange products from the primary producers in Tanga region to the local or international market

1.4 Research Questions

1.4.1 Main Research Question 1

1. How is the orange fruit value chain organized within Tanga region?

   i. What are the roles of the different stakeholders in the orange value chain and who are the influencer actors?
   ii. What logistics and quality demands are required for the orange traders?
   iii. What constraints exist to the orange traders within value chains?
   iv. What is margin share for each of the actors in the orange value chain?

1.4.2 Main Research Question 2

2. What would be the optimum design for investing into the orange value chain in Tanga region?

   v. What is the desirable product mix for investors within the Tanga orange value chain?
   vi. What infrastructure will be needed for the new value chain?
   vii. How are the business environment in terms of investment policies and which risks could be anticipated?
   viii. Are there agribusiness organizations within Tanga that could play a role of chain supporters or be interested in collaboration?

1.5 Outline of the Study

This report is organized into six main chapters. Chapter I offers the background of the study and describes the problem statement. Its further includes the formulated research questions that guided the study. Chapter 2 lays down literature concerning agriculture in Tanzania and the importance of orange farming. It also examines the constraints within the agro sector of the country. In Chapter 3 the report deals with the research methodology thereby elaborating the research area, tools used and the data analysis procedure.

Chapter 4 consists of the empirical findings of the field research and the discussion of the results are covered in Chapter 5. The report ends with Chapter 6 that includes the conclusion and recommendations of the study.

CHAPTER 2 LITERATURE REVIEW

2.1 Tanzania

Tanzania is a country in East Africa bordered by Kenya and Uganda on the north, Rwanda, Burundi and the Democratic Republic of the Congo on the west, and Zambia, Malawi and Mozambique on the south. To the east it borders the Indian Ocean as shown in figure 1 below.

Agriculture is the leading sector in the Tanzanian economy, accounting for nearly half of the Gross Domestic Product. 85% of the population is involved in farming and agriculture is almost completely rain dependent. Farming is predominantly low-tech with 70% of all farms cultivated by hand hoe (Irish Aid, 2008).

Figure 1 Map of the World and Africa showing the location Tanzania
Source: www.GraphicMaps.com

Tanzania's climate and growing conditions are favorable for a wide variety of fruit, vegetables and flowers. The major fruit potential is in pineapples, passion fruit, citrus fruit, mangoes, peaches, pears and bananas, while vegetables include tomatoes, spinach, cabbage and okra (Irish Aid, 2008).

The citrus fruit growing area of Tanzania is mainly located within the Tanga region and the region is responsible for part of the statistics in figure 2 below.

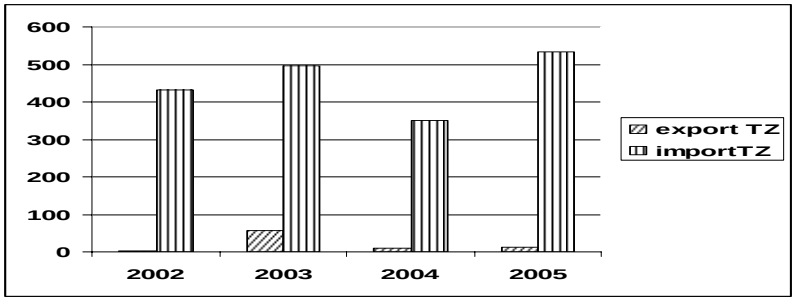

Figure 2 Tanzania Exports and Import orange juice
Source: FAO Statistics 2008

Figure 2 above reveals that the orange juice industry in Tanzania is mainly import oriented. There is a very significant difference between the export and import volumes of orange juice within Tanzania. The low volume of export is partly due to the fact that the orange processing industry in Tanzania is still at a developing stage.

2.2 Tanga Region

The Tanga region has a total area of 27,342 km^2 out of which 572 km^2 is covered by water. The total area of the region is about 2.9 percent of the total area of Tanzania. Tanga region is located in the northeastern side of the Tanzania mainland. It is bordered by the republic of Kenya in the north, Kilimanjaro region in the northwest, Manyara region in the west, Morogoro and Coast region in the south and the Indian Ocean in the east. Administratively, the region is divided into eight districts, namely Handeni, Kilindi, Korogwe, Lushoto, Muheza, Pangani, Tanga and recently Mkinga.

The dominant climate in Tanga Region is warm and wet. It is found along the coast and in the inland. In the Western plateau of Handeni district a hot and dry climate dominates and in the Usambara Mountains a temperate climate. In most cases, there is no big variation of temperature at the coast due to the influence of the Indian Ocean. However, during the hot months (December to March) the average temperature in Tanga is approximately 30˚C - 32˚C during the day and about 26˚C - 29˚C during the night. While, during the cool months (May to October) temperatures are approximately 23˚C - 28˚C in the day and 20˚C - 24˚C in the night. Another characteristic of the coastal climate is the high atmospheric humidity, which often goes up to 100% maximum and 65 to 70 percent minimum. Generally, the region experiences two major rainfall seasons, with long rains between March and May and short rains between October and December.

Tanga region is regarded as the most significant producer of citrus fruits in Tanzania. According to the Tanzania National Sample Census of Agriculture 2002 – 03, Tanga has a total planted area of 9342.34 Ha and productivity 11 tons per ha as shown in table 1 below (Agriculture Census 2002 - 03).

Table 1 Cash crop production and productivity, Tanga region, 2002/2003

Crop	Total planted area (ha)	Area/growing households	Productivity (tones/hectares)
Coffee	3,199.51	0.524	0.223
Oranges	9342.34	1.3	11
Mango	4,268.14	0.7	13
Coconuts	14,765.12	21.6	3.5
Sugarcane	2,356.04	0.4	9.4

Source: National Sample Census of Agriculture 2002/2003, Tanga region socio-economic profile, January 2008

2.3 Production of Oranges within Muheza district, Tanga

Orange trees were first planted in Muheza district in the early 1900s by Anglican Missionaries. The propagation of oranges was mainly achieved during the period 1930 to 1940 due to the presence of a nursery run by Mlingano Sisal Research Station near Muheza. The general opinion among scholars is that orange production in the district grew to be of major economical importance during the late 1970's (Kikuu, 2002). In addition, it's important to note that the orange industry within Muheza is still experiencing tremendous growth to date.

The growth of the industry to date is revealed in the table 2 below, revealing increases in production area and yield from 2003 to 2006. It's important to note that most the orange production within Muheza does not employ fertilizers and pesticides (Muheza Agricultural Officer, 2008). According to Møiniche (2008) around 60% of the oranges produced in Tanga region are exported to Kenya, mainly during the peak production season of June to September.

Table 2 Muheza District: Crop Areas and Production, 2003-2006

Crop	2003 / 2004		2004 / 2005		2005 / 2006	
	Ha	Tons	Ha	Tons	Ha	Tons
Cashew nuts	50	20	53	15	59	25
Oranges	6,780	61,020	7,000	63,000	7,205	65,200
Coconuts	8,000	12,000	7,492	11,238	7,450	11,175
Bananas	5,320	53,196	5,418	54,176	8,622	43,110
Paddy	4,415	5,298	4,464	5,357	3,847	4,616

Source: Muheza Investment profile 2008

2.4 Seasonality

Oranges can be produced through out the year in Muheza district. Every four months oranges flower and two months later the fruits ripen which gives two seasons per year. The production season is between April to November with peak season between June and August. The period from September to November is low season, while December to March is regarded as a period of fruit scarcity. Several orange verities grow in Muheza district. They are Valencia early and Valencia late (Msasa), Pineapple, Mediterranean sweet (Nairobi), Jaffa, Washington navel, and Matombo sweet. Table 3 below shows the percentage of harvesting orange at the different seasons.

Table 3 Production at different season

Items	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Varieties	Valencia, Jaffa, Washington navel				Jaffa, Valencia		Valencia early, Med-sweet, Pineapple			Valencia late and early		
Production	5%				10%		70%			15%		

Source: Agriculture office in Muheza and survey data

2.5 Segera Integrated market in Tanga

Segera is located in Handeni district in Tanga region. It borders Muheza, Pangani, and Korowge and Simanjiro districts. Tanzania central government is intending to establish it in order to boost and drive local and neighboring regions' development of economy. And the central government has commissioned Bureau of Agricultural Consultancy and Advisory Service and Sokoine University of Agriculture to do the feasibility research of this project, and now it is finished. The Segera international market will essentially be for maize and oranges. But allowance will be provided for its diversification to fruits, vegetables and other crops. The fruit handling, storage facilities are planned. It is also designed an export processing zone with a number of incentive for investment that includes exemptions from foreign exchange control, payment of cooperate tax and withholding tax for the first ten years. Proposed ownership composition includes three districts councils of Handeni, Muheza and Korowge because though Segera is situated on Handeni district, most services like water, electricity are derived from Handeni district, at the same time, most orange are expected from Muheza district. Also market ownership includes other stakeholders, even large-scale buyers from outside the region. (MITM)

2.6 Infrastructure Supporting the Tanga Orange Value Chain

An adequate and efficient Infrastructure is vital for the functioning and development of the orange industry through out Tanzania. The most important elements are namely; roads, electricity and communication.

2.6.1 Roads

Tanga is easily accessible to Kenya, Arusha, Kilimanjaro and the rest of the regions by the road system. The road network is relatively good despite the fact that some of the roads are not easily passable during the rainy season. In the region, all weather passable roads account for 47% of the total infrastructure with 71% of the road infrastructure being of earth surface, 23% of gravel and 6% of asphalt (Muheza District Council).

The railway line linking Dar es Salaam, Tanga and Arusha cities goes through Muheza. The roads and railway line link Tanga region with Dar es Salaam and Kilimanjaro international airports. Most of the feeder roads used to bring crops to the market are

mainly gravel or earth roads. Some of these roads maybe are passable with difficulty during the rainy season.

2.6.2 Power

Electricity consumed in Muheza is drawn from the national grid system, while Amani division gets electricity from the Korogwe sub station. Areas of Amani with electricity include Marvera, Derema and Amani itself. The area of Segera forms a corridor for the electricity supply system linking Tanga City to the hydropower stations at Pangani Falls and Hale on the Pangani River. Villages in this corridor with electricity include Mambeni, Lanzoni, and Mjesani. The other corridor with electric supply includes areas along the Tanga-Muheza highway and along the coastal area south of Tanga Municipality. The majority of households in Muheza-Mkinga district used kerosene fuelled wick lamps and hurricane lanterns for lighting. Electricity is used by about a third of urban households and by only a tenth of the proportion in rural areas where wick lamps are most common.

2.6.3 Water

The market will be able to obtain water from the Handeni Trunk Main with two gravity intakes at Mandera and Segera, all taking water from the Pangani River. The two intakes have a capacity of 1.54 million gallons per day. However processing factory need to built own purifying water system since UNNAT did this even they can use local treated water.

2.6.4 Telecommunication

The telecommunication function is provided by Tanzania Telecommunication Ltd. Landlines connect all districts in Tanzania and mobile phone systems (Celtel, Tigo, Zantel and Vodacom) cover all districts within Tanga. Coverage is being progressively extended over Tanzania. Internet services, postal and fax are available at Muheza, Korowge , Bomani and Handeni town. Television broadcasts from Dar es Salaam and satellite-based systems can also be accessed in most regions of the country.

CHAPTER 3 RESEARCH METHODOLOGY

3.1 Introduction to the Study Area

Muheza is the leading citrus producing district within Tanga region. The district lies south and west of Tanga City and is bordered by Mkinga to the north, Pangani in the south and Korogwe district in the west as shown in figure 3 below. Muheza District has a total area of 1,974 km^2 and arable land covers 1,145 km^2. Approximately 70% of the arable land is utilized and the rest unexploited.

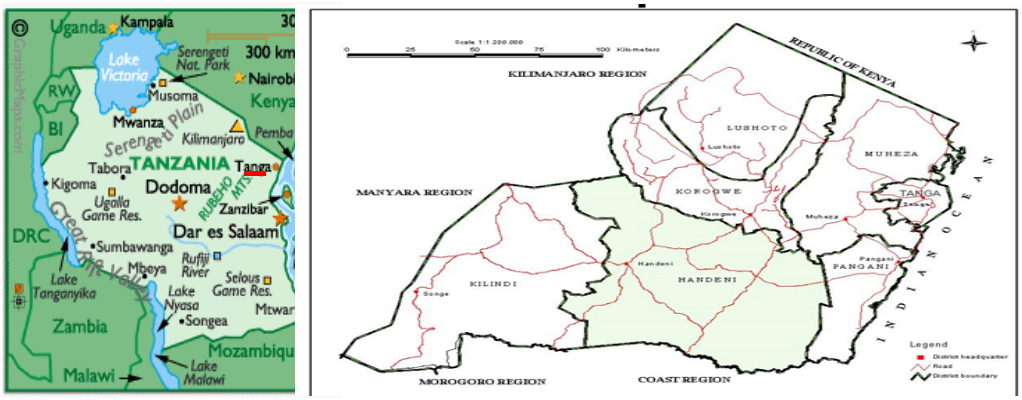

Figure 3 Map of Tanzania showing Tanga region and Muheza district.
Source: Muheza District Council

The main economic activity in Muheza is agriculture which employs over 90 of the population and provides 90% of the income to people. Muheza's estimated population in 2007 was 184,585 people. The major food crops are maize, beans and bananas. The cash crops include tea, sisal, cashew nut, coconuts and citrus.

3.2 Methodology

The research was undertaken using a quantitative approach and based on empirical data obtained during the field visit to Muheza district, Tanzania. The fieldwork in Muheza district was conducted from 17th July 2008 to 15th August 2008. The process of data collection in Tanga started with two separate interviews of the key respondents Mr. Mtunbi, agriculture officer in Muheza and Mr. Isaya, the manager of Tanga Association of Best Orange Growers Co. Ltd. The interview checklist helped to focus the questionnaire with an aim of understanding generally how the current fruit industry in Tanga is currently organized, the constraints in the sector and the big companies involved in the trade. Thereafter two categories of traders were selected for the case studies that will focus on the role of different chain actors and stakeholders. This was enable the researcher to carry out a chain map that guided the formulation of the mini survey involving 10 citrus traders in the Tanga region. The

study actively targeted actors that are involved in the processing orange juice market to obtain useful information. Also included in the study were an interview session with Prof. Damas Pluiling at the Sokoine University of Agriculture so as to gain further information concerning the value chains. The research employed the most recent books, Internet sites, publications and reports concerning the Tanga fruit industry to support its analysis.

3.3 Case Studies

The case studies were started with two (2) traders involved in both the export and domestic value chains. Followed by fresh orange retailers at Tanga market and Dar es Salaam market. The transporters were also interviewed. I also visited and discussed with the supply manager of Unnat Fruit Processing Ltd. at Morogoro region and the branch manager of supermarket Dar es salaam respectively. Interviews were address the issues related to the role of different chain actors, constraints in the value chains, coordination and governance of the chains, the role of Government in the chain and political influences associated with this role. (*Related to Sub Questions 1, 2, 3 and 8)*

3.4 Mini Survey

A mini survey was carried out among citrus traders in Tanga District which is the leading citrus producing district in Tanzania. Twenty (20) citrus traders were selected through selective sampling from the total number of citrus traders operating in the district. The sampling was carried out using the trader's register from the local authorities associated with the Trade and Commerce ministry. Two clusters of traders were established; traders involved in the domestic market and traders involved in the export market. Each cluster was composed of five (5) traders and hence a total of ten (10) respondents. Questionnaires were used to collect empirical data. This is because the research aims to achieve a feasibility study of both the domestic and export citrus fruit value chains in Tanga and make recommendations for developing an efficient processing handling system. The questionnaires focused on the way traders market their fruits, constraints that they face, the benefits they receive as chain actors and the profit margins, if any, available to the traders. (*Related to Sub Questions 1-5)*

3.5 Analyses of results

Data from the research was used in designing an efficient chain for the internationally active juice and fruit trader company interested in investing in the citrus industry in Tanga. Value chain approach was employed to demonstrate the added value of orange chain and insight into the actors' roles and relations. The margin share of actors were compared between the different types of actors in order to get clear idea on the distribution of added values. The study also diagnosed the bottlenecks the actors face and the opportunities within the orange chain. Chain empowerment theory

helped to design the new value chain of orange. PEST tool and anticipation of risks was used to analyze the business environment for the potential investors who are interested in involving into the orange processing industry.

CHAPTER 4 RESULTS

4.1 Orange Value Chain Muheza District

Through interviews and the case study was able to map the value chain map of oranges in Muheza district as shown in figure 4 below. The value chain shows the current organization of the value chain and the different stakeholders therein.

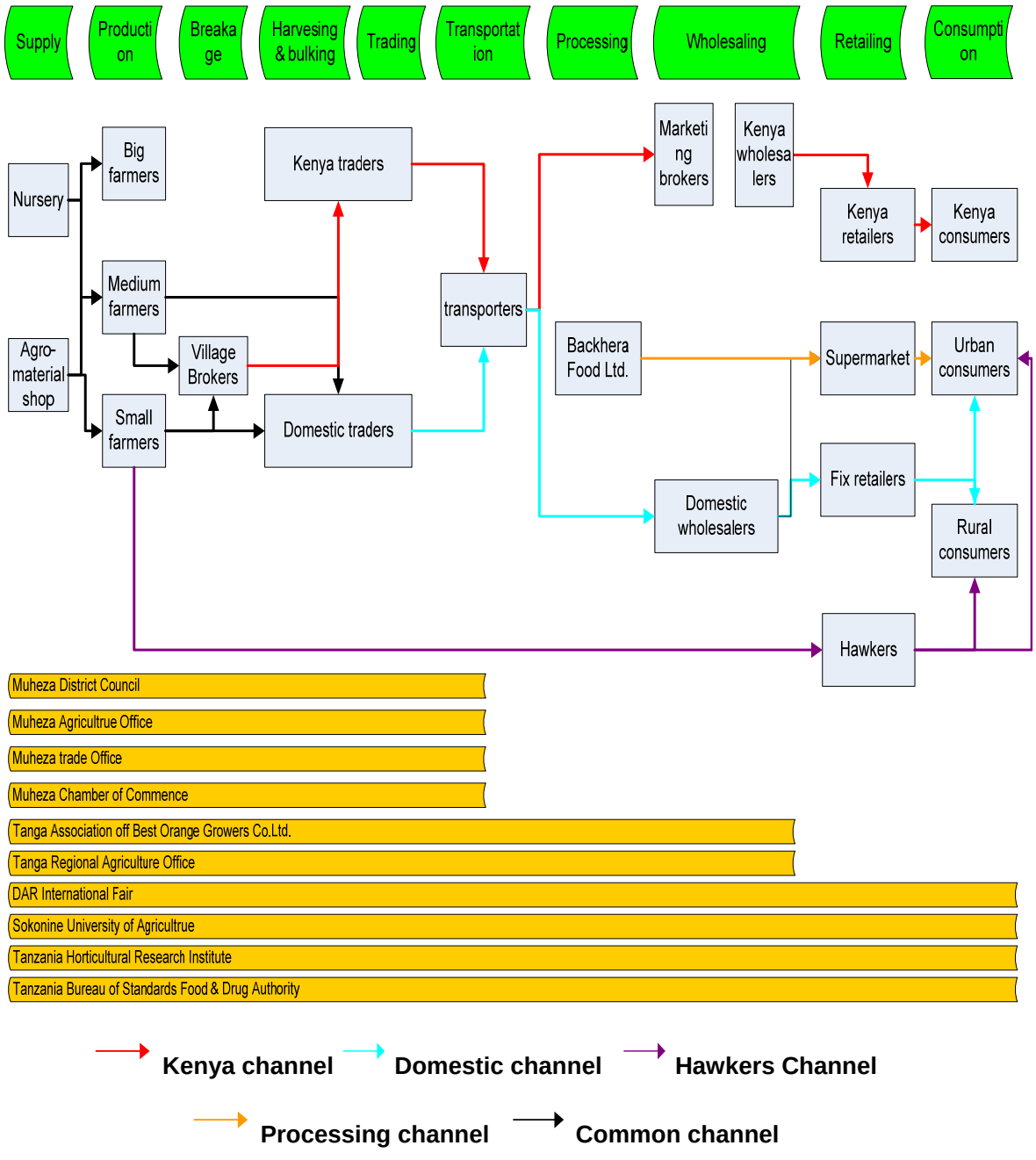

Figure 4 Orange Value Chain Map in Muheza District, Tanga region

The value chain system is organized mainly along four channels for the production; the domestic, international and hawkers channels for fresh orange, the fourth one is for processing channel. However a number of the actors are involved in both channels.

4.1.1 Agro Suppliers

Most farmers obtain young orange trees for planting from their own back yard nurseries or purchase from other farmers who have small home nurseries. The industry has currently one operational orange nursery at Lunges in Muheza that is under the administration of the district. This situation is due to the fact that a number of several nurseries ceased to operate years ago due to mainly lack of financial support. The Lunges nursery was initially supported by the Ministry of Agriculture, and then later on was financed by the Central and Local Government. However to date it's currently mainly funded by the Local Government hence Muheza District Council is planning a take over bid. Muheza district plans to establish 160,000 seedlings at the 6 village stations of Bambini, Bemba, Torque, Nabila, Nagoya and Nadia. The selected varieties are being obtained from the Arish Agricultural Research Institute and also locally sourced.

Agro input dealers supply agro chemicals like pesticide, weed killer and fertilizer through three shops within Muheza town. There is a good demand for the chemicals and according to the Muheza Extension Officer, some orange trees within the district are applied with chemicals to prevent or treat diseases like gummosis, root rot, fruit rot and white flies.

4.1.2 Farmers

In Muheza district, orange farmers can be categorized into three groups namely; small, medium and large scale farmers. Small farmers normally have between 1 to 5 acres of orange orchards. Family members are the main labor for their farms which grow a mix of fruits and crops such as pineapples, maize, coconut and cassava. Medium scale farmers are also diversified fruit and cash crops growers with acreages of between 5 to 15 acres. They use family labor in low season and employ non permanent contract labor during the peak season. Large scale farmers are less diversified fruit growers with more than 15 acres of orange orchard. They grow oranges as one of their most profitable farming enterprises. They mostly use contract labor and with some of them employing permanent labor.

The farm gate prices of the organs grown within Muheza vary according to a number of factors. Farmer indicated that they sold their orange at between 7 to 20 Tshs per piece this year but in the remote areas some farmer only sold orange at 5 Tshs per piece. However the overall price of oranges has increased by 12 Tshs per piece from

3 Tshs in 2002 to 15 Tshs in 2008.

4.1.3 Harvesters

Pickers do carry out the harvesting, counting and loading of oranges on behalf of the traders. Normally farmers do not do the harvest their oranges until a buyer has been indentified due to the fact that once harvested, farmers are not able to store orange according to recommendations while waiting for a buyer. In addition harvesting without first identifying a buyer increases the costs to the farmer because he will have to transport the oranges to a buyer rather than the buyer collecting off the trees. Traders normally come to the farm of producers and hire pickers from within the farmer's household or village to harvest the produce. The pickers employ baskets to collect and empty the oranges beside the trader's vehicle. Fuso and Canter trucks are the most preferred vehicles by the traders for transporting oranges. Besides the trucks are people who select the oranges according to size and place them into baskets of 200 a piece and when the basket is full, it's loaded onto the truck. The harvesting fee is charge as 2 Tshs per piece and 30,000 Tshs is paid for loading per Fuso truck by 12 peoples. The traders come along with the own personnel to count the oranges and often two persons are responsible for counting. The cost of harvesting, counting, bulking and loading is paid by the traders.

4.1.4 Traders

The orange industry in Muheza has two groups of traders namely the local traders and outside traders. The outside traders are from Dar es Salaam, Arusha, Tanga, Morogoro and as far as Kenya. However the local Muheza traders make up the majority of the fruit trader active in the region. In addition to the traders are fruit brokers working at the villages, district and wholesaling levels.

Traders purchase orange through three different kinds of channels. One of the channels involves direct purchase from producer's farm. In this channel the traders are able to obtain the orange at relatively low prices and avoid paying brokerage fee. This channel is mostly used by the local Muheza traders because they are familiar with the orange production areas and the farmers. However with outside traders getting more and more familiar with the orange industry in Muheza, some outside traders have started employing this channel to reduce on their purchasing costs.

The second channel involves the purchase of oranges though brokers. It begins with a new outside trader requesting a Muheza broker to organize oranges from farmers on their behalf. Some brokers are traders and or transporters as well. They obtain oranges directly from the fruit farmers or brokers active at village level. They however purchase oranges mostly from remote farmers at lower prices to ensure a profitable margin. The brokerage fee is normally 1 to 2 Tshs per piece of orange. Brokers who forwardly integrate the trader role make an additional 1 to 5 Tshs depending on the

fruit season.

The third channel is mainly active in the low production season. Muheza traders inform the village level broker to get sufficient oranges for transportation and only go into the villages to collect truck loads of fruit on advice of the village broker. At this low period, Kenya traders and other regional traders drop out significantly.

When traders arrive at the wholesaling markets at big cities like Dar, Nairobi, they use local market brokers to sell their oranges quickly especially during peak season. Days spent at the wholesaling market ranges from 1 to 7 days depend on seasons and the number of buyers present. The market broker's fee is normally 2 Tshs per piece.

4.1.5 Transporters

Transportation is a very important logistics issue within the orange value chain in Muheza. Transporters use small trucks e.g. Canters and larger trucks e.g. Fuso to transport oranges from Muheza to various destinations such as Dar es Salaam, Arusha, Moshi, Mwana, and Morogoro. The Canter truck is designed for a standard load capacity of between 3 to 4 tons, but normally traders load 5 to 6 tons which is approximately 30,000 pieces of oranges so as to increase the profit margin per trip. This comes at a quality cost however since the fruits are subjected to detrimental compression.

When traders do exportation of orange they only use fuso that can carry about 10 tons of oranges or approximately 50,000 to 60,000 pieces. The transportation fee varies according to distance traveled and not by weight. A number of traders in Muheza owe between 1 to 10 trucks each. A few number of farmers do own trucks as well however majority of the traders rent trucks for conducting their business. According to the transporters interviewed, approximately 100 big trucks and 30 small trucks operate within Muheza district during the for orange peak season. They further estimated that about 20 trucks are brought from foreign cities such as Dar es Salaam by the outside traders.

There are several logistics companies in Tanzania involved in the transportation of other agriculture products. A number of the transporters indicated that they focus on orange transportation during the peak time and divert to transportation of other product like maize and wheat during the low orange season.

4.1.6 Wholesalers

According to survey, two categories of wholesalers were identified; those operating in small cities like Tanga and larger wholesalers in cities such as Dar es Salaam. The first category of wholesalers delivers oranges directly from the farmers to retailers at the market. The deliveries are at times based on earlier orders but in other cases, the

whole seller simply delivers fruits to the market without a standing order. The wholesaling price is from 30 - 50Tshs per piece depending on season. Retailers buy and transport orange from wholesalers using bikes or barrows. The second category of wholesalers such as Kariakoo, Buguruni and Sterial at Dar es Salaam obtain oranges from traders who purchase from farmers. The wholesalers sometimes need to transport oranges from various locations especially during the low season. They use big bamboo baskets to carry the oranges within small cars. The cars have load capacities of between 20,000 - 10,000 pieces of oranges per trip and cost about 20,000 Tshs to hire. Current wholesaling prices range from 35 - 70 Tshs. At Nairobi, wholesalers sort and package orange according to size and number. Each bag contains 260 pieces of oranges and is sold as a unit.

4.1.7 Retailers

At big cities like Dar es Salaam, four kinds of retailers can be found; supermarkets, small shops, fixed retailer at market (open air fruit markets) and street vendors. Majority of the retailers obtain their orange supply through three common channels namely; wholesalers, traders and bigger retailers. Findings from the interview at Kariakoo and Tanga markets indicated that the fixed retailers at the market are able to sell between 500 - 1000 oranges per day depending on the seasons. During peak season, a retailer at Kariakoo market normally transport between 4-5 trips of oranges per week at a cost of 10,000 Tshs per trip. In the case of retailers at Tanga market, transportation costs are avoided given the fact that they transport the oranges themselves using wheel barrows or bicycles. In addition to transportation costs, retailers pay a marketing fee of 4,000 Tshs at Tanga market and 19,500 Tshs at Dar es Salaam markets per month. Retailers normally sell the oranges at double or near double the cost price, for example, they buy oranges at 55 Tshs per piece from their suppliers while sell at 100 Tshs to the consumers.

Supermarkets in Tanga are faced with a unique challenge in marketing fresh oranges for example S.D. Savant Supermarket in Tanga region city does not sell fresh oranges. This is because consumers can easily buy fresh and cheaper oranges from the open air market or street vendor within close proximity with the supermarket. This challenge is not experienced in non orange producing areas like Dar es Salaam were for example Malaseko Supermarket sells domestically produced oranges at between 50 - 200 Tshs depending on the season. According to the super market supervisor, sale quantities are about 50 pieces per day.

The largest fruit retailers within Dar es Salaam such as Shoprite sell imported oranges from mainly South Africa with higher market price. The supermarkets claim that the reason for importing oranges in that the domestically produced fruits do not meet their higher quality requirements in terms of uniform fruit color, no skin defects and size.

4.1.8 Processors

Large scale fruit processing industry within Tanzania is still at its infant phase. Currently a few processing factories are operational but there is no processing factory within Muheza district. However this is not to say that there is no form of value addition within the orange industry in Muheza. In the past, there was the Goldtan processing factory at Korowge district in Tanga region but it stopped production in 1986 and today it's a dilapidated structure. Currently a few smallholders and women community groups produce orange juice and jam. However the production is carried out discontinuously and mainly at a subsistence level due to shortage of finances. The local processors are further challenged in obtaining production permits from the Tanzania Bureau of Standards, Food & Drug Authority. This is because their work places at times do not meet the hygiene requirements and quality standards.

The Muheza Food Processors Association wants to improve small farmers' income by adding value to oranges. They organized the local women group and obtained support from the UNIDO, Tanzania. The local women group processor now sale their product under fair-trade in Dar es Salaam at 300 Tshs of wholesaling price, 500 Tshs of retailing price per bottle at local shops. The research revealed that there is no industrial processing machine in Muheza to date, not to mention basic fruit industry tools like refractometer, etc.

The study revealed that outside the Muheza district, there is a large orange juice processing factory named Unnat Fruit Processing Ltd at Morogoro region. Morogoro is located at a distance of 275 Km from Muheza. The factory is not operational at the moment but trails in processing orange juice were conducted and successfully completed this year. The factory currently has two production lines for three kinds of products. The first line is designed for producing orange concentrate or juice and it has a production capacity of 100 tons fruit per day. The second line is for pineapple or mango processing and has a capacity of 100 tons fruit per day. The third line was ordered already from Italy and it is designed for producing banana juice with a production capacity of 150 tons fruit per day.

The factory intends, once operational, that production of orange, pineapple and banana concentrate will account for 85% of the total annual production and be exported to Unnat's Netherlands partner. 15% of the total production is fresh juice will be packed into ¼ liter, ½ liter, and 1 liter paper box package for the domestic market. The concentrates will be packed into big plastic bags and placed into a metallic barrel of 300 liter capacity during exportation. Approximately 15, 000 tons of oranges produce 250 tons of concentrate according to supply and production manager in Unnat Fruit processing ltd. Unnat intends to purchase fruits locally from contract farmers. However they also plan to procure oranges from Muheza during the low orange season and pineapple from Bagamoyo, a famous production area of pineapples in Coastal region. According to the Supply Manager of Unnat Fruit

Processing Ltd, the factory was not established in Muheza district because the district only produces oranges while in Morogoro numerous fruits such as oranges, pineapples, mangos and bananas are commercially produced. On issues related to constraints within the fruit processing industry, he observed that Unnat Fruit Processing Ltd was concerned about new entrants getting involved in the juice processing market.

In Dar es Salaam, the most prominent processing factory is Bakhresa Food Product Ltd. The company produces seasonal orange concentrate during the months of April to August and also branded drinks like Azam. Given the popularity of the product, during peak season at the Kariakoo selling branch of the company, they are able to sale 780 bottles of concentrate each costing 8000 Tshs.

4.1.9 Juice Retailers

The study revealed that the supermarkets were the dominant channels for marketing orange juice, much more pronounced than the factory outlets at Dar es Salaam. However majority of the supermarkets sell orange juice imported from South Africa, United Arab Emirate and Kenya. South Africa is the main source of imported orange juice into the country and this is closely related to the presence of Shoprite in the country.

Shoprite is a supermarket chain based in South Africa and operating through out Africa. Its procurement organization is based in South Africa and supplies all supermarket branches in Africa. It's a major player in the fruit juice industry and for example one branch of Shoprite in Dar es Salaam sold 214,000 units of fruit juice during the first half year of 2008. In comparison, S.D. Vasant supermarket in Tanga city has sold 207 packages to during the first half of 2008. According to the Marketing Manager Shoprite, the supermarket experiences a 20% increase per year in total sales volume. Other supermarkets like Lmalaseko supermarket purchase fruit juice from local agencies and the agencies transport juice to the retailing premises. The super market experiences peak sale of juice and concentrates between the months of July to December.

4.1.10 Chain Supporters

i. Muheza District Council

At Muheza district council, they have Agriculture office ,extension office and trade office that are responsible for strategic planning and implementation of district agriculture development specially in orange subsector because orange is the main income source for farmers. And the council can make policies on tax reduction and providing subsidize to farmers.

ii. Tanga Association of Best Orange Growers Co. Ltd.

TABOGCL was established at 2005 supported by Rural Urban Development Initiatives Tanzania sponsored by one of Norway organizations. But now they operate independently. Their goal is to improve orange farming performance and main task are to provide training to farmers in growing technology and help to market oranges together in order to improve the selling price of growers' orange. Now they have 1 regional head office located at Muheza, 4 branches of association at district lever and 15 association at division lever with total 1013 members having orange production area …..ha. It increased 1000 ha last year by more members joined and expanding planting area. They also provide financial support to farmer member by share with total 166 million Tshs. And they organized farmer marketing orange together and the price higher 2Tshs than non members' selling price. The main constraint for them is the variety of seedless because the Kenya processing factory wants to procure orange from them as stable supplier unless the orange they offer is seedless. They do not know where can get the seedless variety. This association is the very good potential co-operator for investor in orange industry in Tanga because it organized and worked well and have experience in collecting and supplying orange from the different divisions and districts in Tanga.

iii. Muheza Chamber of Commence, Industry and Agriculture

Is one of over 80 district centers of TCCIA, which are autonomous in its operational activities. Assistance by Swedish governmental development agency has played a vital role in establishment of the regional and district Chambers especially in providing training, office equipment and mobilization/sensitization of the business community. It links the private sector to the Government with a view toward promoting the development of private enterprise. By linking issues central to business, the Chamber serves an arena where dialogue with the government serves to promote sustained growth and development of the private sector. It financed orange farmers each year.

iv. Ministry of Industry, Trade and Market

The Ministry of Industry, Trade and Marketing is one of the sectoral ministry under United Republic of Tanzania Government which is responsible for overseeing and ensuring the industrialization of the Tanzania economy through transforming the economy from an agricultural economy to a vibrant semi-industrialized economy by facilitating the industrial sector to be the engine of growth. The Ministry oversees the implementation of National Trade Policy, Small & medium Enterprises policies. There are agencies, authority and Independent trade and industry support institutions under the Ministry which are the main implementer of sectoral policies and strategies. More importantly it is the main organizer for Segera Market.

4.2 Quality and Logistics Management in the Chains

According to the study, interviews with the traders revealed that transportation was one of the major logistical requirements within the value chain system at Muheza. The region has transportation facilities that include air freight, boat shipment and road transportation. However all fruit traders use truck transportation due to the fact that it's cheaper and more convenient than the other two options. Logistics coordination in orange collection benefits from a number of unique features in the industry. A number of the farmer's orange orchards are just beside the road hence easily accessible. In cases were the farmer's orchard is not near the road, through cooperation with the neighboring farmers, they build road by themselves connecting one farm to the next till all farms are connected. By using the current road network, the traders estimate that they are able to access 90% of the farms by truck. In the case of in accessible farms, harvesters or loading people use baskets and barrows to transport oranges to the truck. In this case traders pay an extra carrying fee of 1 - 2 Tshs per orange.

Quality control systems are more or less non existent within the domestic orange value chain. Elementary quality control was observed among the actors in the orange industry. In majority of the markets, there is no package and temperature control for the orange during transportation and retailing. At wholesaling lever sorting and grading is done according to the size of oranges because big size oranges can sell at higher price than smaller ones. In the Kenyan market, wholesalers sort and package 260 pieces of orange into small sack or 1000 pieces of oranges into big sack according to size. At the retailer level in Tanzania, they also sort according to different sizes. In some instances, street hawkers sell fruits to passenger on the buses. They sort and package the oranges into small plastic bags of 22 - 25 pieces oranges per bag with a selling price of 500 Tshs.

The farmers and traders who were interviewed preferred the Valencia orange variety most compared to the Nairobi, Jaffa and Washington varieties due to the fact that the trees produces late maturing fruits which remain on the tree for long durations after ripening. This characteristic is highly sought after by the orange farmers because it allows them to harvest and sell late in the season when prices are higher. Theses characteristics are also in the Nairobi orange variety. Valencia and Nairobi have fruit that are very juicy and sweet, with smooth thin skin that make them very firm and thus tolerant to post harvest handling. The Washington orange variety is seedless but compared to Valencia and Nairobi, it's comparatively juiceless.

4.3 Value Addition in the Domestic Orange Supply Chain

The domestic market can be divided into rural and urban household consumption. It involves farmers, middlemen, transporters, traders and consumers. Oranges are mostly consumed as fresh fruit, although some of them are processed into juice.

4.3.1 Gross Margin Analysis at Farmer Level

The gross margin at farmer level can be calculated by considering a small farmer with a production of 32,000 pieces of oranges per acre (Table 3).

Table 3 Gross margin analysis of a 1 acre small farmer

Description	High season	Low season
Land clearance (depreciation 30 years)	22,500/30 =750	7,500/30=250
Uproot tree trunks (depreciation 30 years)	30,000/30 =1,000	10,000/30=333
Digging (depreciation 30 years)	15,000/30 =500	5,000/30=167
Seedlings (depreciation 30 years)	37,500/30 =1,250	12,500/30=417
Planting seedlings(depreciation 30 yrs)	22,500/30 =750	7,500/30=250
Weeding	30,000	10,000
Pruning	20,000	20,000
Chemicals		
Total cost	**54,250**	**31,417**
Production /acre	24,000	8,000
Selling price	10	20
Income	**240,000**	**160,000**
Gross profit	**185,750(€103)**	**128,583(€71)**
Margin per piece	**7.7**	**16.1**
Gross Margin	**77.4%**	**80.4%**

4.3.2 Gross Margin Analysis at Trader Level

The study observed that the orange traders are the lead actors in the chain with the ability to determine prices and influence issues related to chain governance. The selling price is always constantly changing and not stable. Transportation costs are most significant to the traders and the fee accounts for large part of their cost as revealed in table 4 below which involves a Muheza trader selling to Dar es Salaam.

Table 4 Gross Margin Analysis of a Muheza Trader (Per Trip)

Description	Peak season	Low season
Number of orange purchased per truck	60,000	60,000
Purchasing price	10	20
Purchasing cost per truck	600,000	1,200,000
Harvesting and loading cost	160,000	160,000
Broker fee	0	60,000
Transportation cost	700,000	700,000
District levy	30,000	30,000
Boundary fee	0	0
Broker fee	78,000	78,000

Unloading fee	0	0
Marketing fee	30,000	30,000
Total cost	**1,598,000**	**2,258,000**
Selling price	40	65
Transportation loss (pieces)	3000	6000
Total income	**2,280,000**	**3,510,000**
Gross profit	**682,000 (€379)**	**1,252,000 (€695)**
Margin per piece	**11.4**	**20.8**
Gross margin	**29.9%**	**35.6%**

4.3.3 Gross Margin Analysis at Transporter Level

During the field study it was realized that in the case of transporters, fuel cost play an important role on their gross margin as revealed in the table 5 below. The average margin per orange was as well lower in the group in comparison to the other actors. However its important to point out that a number of transporter are vertically integrated into the operations of the traders. This is due to the fact that the traders normally collect the oranges from the farmers and middlemen for transportation to the retailers.

Table 5 Gross margin analysis of transporter

Destination / Items		Nairobi	Mombasa	DAR	Arusha	Uganda
Distance (km)		661	210	276	350	1200
Income	2007	800,000	435,000	550,000	-	-
	2008	1,144,000	522,000	600,000	700,000	2,000,000
Fuel cost (Tshs, 2008)		779,000	258,000	339,500	410,500	1,220,000
Fuso depreciation (5 years,150 trips / year)		46,667	46,667	46,667	46,667	46,667
Driver salary/trip		24,000	24,000	24,000	24,000	24,000
Cost /trip		849,667 (€472)	328,667 (€183)	410,167 (€228)	481,167 (€267)	1,290,667 (€717)
Gross profit		294,333 (€164)	193,333 (€107)	189,833 (€105)	218,833 (€122)	709,333 (€394)
Gross margin		25.7%	37%	31.6%	31.3%	35.5%
Average GM						**32.2%**
Margin/ orange		4.5	2.97	2.92	3.37	10.91
Average margin per orange						**4.93**

The study did not find any evidence that the rates were directly linked to fuel consumption per route but rather the prevailing condition of the roads among other

factors.

4.3.4 Gross Margin Analysis at Wholesaler Level

Table 6 below summaries the gross margin achieved by the wholesalers according to the study data collected. In calculating the gross margin below, a month of trading information was considered.

Table 6 Gross Margin Analysis of a Dar es Salaam Wholesaler

Description	High season	Low season
Buying price	40	65
Selling orange per month (piece)	80,000	25,000
Purchasing cost	3,200,000	1,625,000
Transportation cost	160,000	80,000
Marketing fee	19,500	19,500
Cost	3,379,500	1,724,500
Selling price	55	100
Income	4,400,000	2,500,000
Gross profit	1,020,500 (€567)	775,500(€430)
Margin /Piece	**15**	**35**
Gross margin	**23.2%**	**31%**

4.3.5 Gross Margin Analysis at Retailer Level

The study used an urban retailer in calculating the gross margin analysis due to a number of reasons. It was observed that the urban retailers experience variations in margins earn according to seasonality.

Table 7 Gross Margin Analysis of a Dar es Salaam Retailer

Description	High season	Low season
Buying price	55	100
Selling orange per month (piece)	15,000	5,000
Purchasing cost	825,000	500,000
Transportation cost	0	0
Marketing fee	19,500	19,500
Cost	**944,500**	**524,500**
Selling price	100	200
Income	**1,500,000**	**1,000,000**
Gross profit	555,500(€308)	475,500(€264)
Margin /Piece	**45**	**100**
Gross margin	**37%**	**47.6%**

4.3.6 Margin share within orange value chain

After we put all added values per piece together from farmer to retailer, we can calculate the margin share for each actor within the orange chain by their margin per piece dividing the total added values per piece.

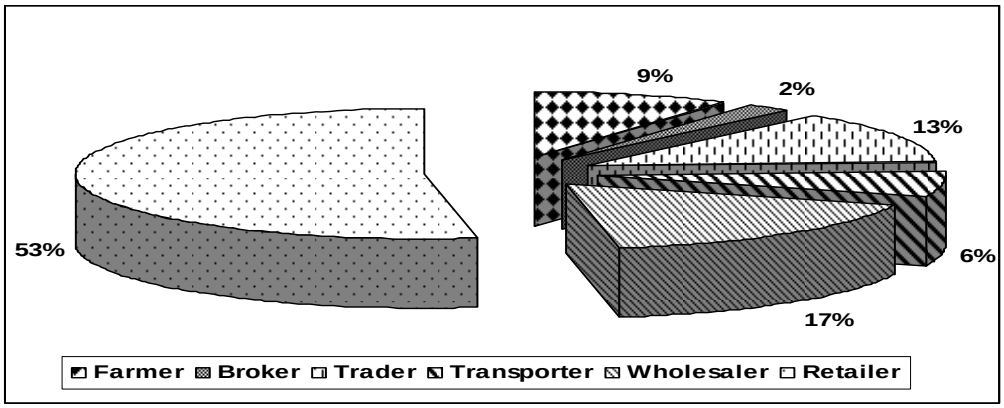

Figure 5 Margin shares of orange chain actors at high season

4.4 Value Addition in the International market

International market like Kenya, Comoros and Uganda are the important market for orange produced in Muheza. Especially Kenya is the dominant one. It is estimated by agricultural officer of Muheza and exporters that orange exported to Kenya cities like Nairobi and Mombasa accounts for more than 60% of whole production in Muheza. The country, Uganda seems to be the new market for Muheza orange traders since this year.

Table 8 GM analysis of Muheza Trader selling orange to Nairobi market per trip

Description	**Peak season (2008)**
Number of orange sold per truck	60,000
Purchasing price	10
Purchasing cost per truck	600,000
Harvesting and loading cost	160,000
Transportation cost	1,044,000
District levy	30,000
Boundary fee	20,000
Broker fee	100,000
Unloading fee	0
Marketing fee	54,000
Total cost	**1,848,000**
Transportation lose	3500
Total income per truck	**2,735,000**

Gross profit	887,000(€492)
Margin per piece	**14.7**
Gross margin	**32.4%**

Actually traders can sell higher price at Nairobi than in Tanzania, because oranges are soled at sorting and package condition by wholesalers in Nairobi. So traders get higher margin than domestic markets however it takes longer time of staying at Nairobi. And At low season, it is rare to see traders transports orange to Nairobi because it is not the season for Nairobi variety that is Kenya people prefer.

4.5 Potential Chain Partners and Collaborators

i. Derma International Ltd

Derma International Limited is an organization with an orange juice processing factory in Morogoro, and in addition to four other factories processing bread, snack, and trading textile etc. the research interviewed the General Manager who was receptive to the suggestion of partnering with the potential investor into the processing of orange juice in Tanzania.

ii. Hyundai East Africa Ltd

Hyundai East Africa Limited was also approached during the study. This was due to the fact that the organization had carried out a field study into the possibility of processing orange juice four years ago but did not start it because it was not the right time for the processing market. At the moment the organization believe that it's the proper time to get involved in the processing of orange juice and is willing to partner with an organization interested in the same.

In addition to the above-mentioned organizations, a number of big farmers with land holdings of over 100 acres when interviewed expressed interest in being involved as contract farmers for any multinational processing factory that was interested in investing into the Muheza region.

CHAPTER 5 DISCUSSION

5.1 Constraints within the Current Orange Value Chain System

The research determined that in the planting of the orchards, the farmers due to lack of information, plant oranges without being very sure of the variety. This later on creates problems in the production of the oranges in relation to seasonality of the fruits. There are times when most of the fruits ripen at the same time due to all being of the same variety. This causes the farmers to leave fruits on the trees due to having no sufficient orders.

The section is affected by the insufficient development of the retailing business. The oranges traders located in Muheza always operate as individuals, which limit their ability in marketing the oranges. In marketing of the oranges at Nairobi, the traders have not been able to form a brand, which causes them to get comparatively low market prices in relation to oranges from South Africa.

During the high season, there is over production that causes the price of the fruits to drop dramatically. This causes the farmers to receive less revenue for the fruits especially in the remote areas. In some cases the farmers are force to throw away their fruit due to logistically problems. These problems are normally associated with the poor state of the roads within the area. On the other hand the low prices in the high season is related to also the fact that there is not processing factory within the area to eliminate part of the over production from the farmers.

In addition to the above areas, the research further revealed that the was a constraint in the industry related to poor quality of oranges produced and ill developed quality control system. It was observed that the color of orange in Muheza is not good looking though they are sweet and juicy. The farmers and traders rather rarely sort and package their orange when they sell them. And the basic equipment needed to monitor the quality of oranges like the refractometer were lacking within the industry. The traders interviewed in the study mentioned that there was a serious lack of financial support for citrus traders from the local banks. This in their opinion limits their ability to expand their business. Finally the current value chain has to compete with the imported oranges from outside Tanzania e.g. South Africa. These oranges are always of a higher quality and are preferred by the high-income consumers within the large cities.

From the result 4.1.8 and 4.1.9, the study reveals that improving and strengthening the fruit-processing industry in Muheza is needed to be put on a schedule due to the undeveloped own processing industry and the situation of quite a lot of fruit juice imported in domestic market. Figure from Custom department of TRA shows that the quantity of 8,630 tons of fresh orange was exported to Kenya in 2007 (Custom, TRA).

According to the conversion rate from Unnat Fruit Processing Ltd. of 60 tons orange converting into orange concentrate by 1 ton. The number of fresh orange exported to Kenya can be converted into orange concentrate by 143 tons while Tanzania indeed imported orange concentrate from Kenya 109 tons in the same year. It is the big evidence that Muheza, as the most producing area of orange in Tanzania lost the added value on the processing stage of orange while Kenyan made this benefit by importing fresh oranges and exporting concentrate back to Tanzania.

5.2 Effect of Seasonality on Trader Gross Margin

The study observed that the orange traders are the leading actors in the chain with the ability to determine prices and influence issues related to chain governance. This is related to the fact that traders are fewer than producers and the small farmers are very dependent on their services to change their oranges into money. The selling price is always constantly changing and not stable. In recent times the selling price has increased from a whole selling price of 15 Tshs to 40 Tshs. Transportation costs are most significant to the traders and the fee accounts for large part of their cost (Table 4). However the business is quite profitable and this is seen in the fact that a number of the traders after some years of the business are able to purchase personal trucks.

In table 4 the research determined that there was substantial difference between the gross margin that a trader achieves during the high season and the low season. The difference in gross margins is mainly caused by differences in the purchasing price, the loss of oranges during transportation and the demand for broker fees during the low season. The higher price of oranges in the low season is mainly linked to scarcity of the produce at that time and the traders do employ brokers to collect the fruits.

After the collection of the fruits into a central location, the traders collect and transport it to the cities. During the low season the traders are able to sell oranges at a higher selling price. Both gross margin and gross profit per truck are higher in the low season compared to the high season but considering the number of trips, traders obtain much more money in high season rather than low season due to the traders can make more trips in high season than in low.

5.3 Trader Gross Margin under the Domestic and International Chains

In the marketing of oranges by the traders, the domestic value chain and the export value chain have significant differences. The differences in the two chains are involved in the cost structure and the amount of fees that are paid out while doing business. In the domestic chain for example, the traders pay district levy but no boundary fees while in the case of the export value chain the trader pay both fees (Table 4 and 8) This has an impact in the cost that a trader incurs in transporting oranges under the export market compared to dealing in the same quantity of oranges

under the domestic market. The export chain however irrespective of the fact that it has a higher total cost price per trip of oranges transported, it provides a higher gross margin of 32.4% compared to the domestic chain that by comparison provides a gross margin of 29.9%. The difference in the gross margins between the two chains is very closely linked to the fact that the selling prices are different in the channel. While in the domestic chain the traders enjoy a selling price of 40 TShs the export market is able to provide a selling price of approximately 50 TShs per piece.

The research was able to reveal that the export market provided a higher gross margin to the traders involved in the business but it was not an under taking that was being taken by many traders within the area. This state of affairs is affected by the fact that the logistical and quality requirements are much higher in the export chain than in the domestic chain. In other words these factors present a barrier of entry to a number of domestic traders interesting in the export-marketing channel. In a way this element assists to retain the competition levels within the export value chain. However this is not to imply that there is not competition at the export level, it is just a lower in comparison to the domestic market. The logistical requirements under the export value chain system have required the traders to make a number of changes in the choice of traded orange varieties. The consumers under the export market prefer the Nairobi orange variety due to its taste while traders prefer the orange variety due to the fact that its skin is stronger that can lower loss during transportation and is medium size.

5.4 Percentage of Gross Margin per Chain Actor

According to the information revealed by the research under figure 5, it was noted that the orange value chain in Muheza involved the farmer, broker, trader, transporter, wholesaler and retailer. In the aforementioned chain actors it was noted that the retailer had the largest share of the chain's gross margin. The broker was revealed to have the lowest amount of value that was generated under the orange value chain. This findings are consistent with the interviews carried out with the traders were it was revealed that the retailers were very influential in the governance of the orange value chains. It is interesting to note that the traders within the Muheza part of the value chain or more less the middlemen and brokers took 13% and 2% respectively. This adds up to about 15% of the gross margin that is generated by the chain system. The continued existence of these middlemen in my opinion is one of the challenges within the orange value system.

5.5 Proposed New Value Chain System

The research findings into the orange value chain system of Muheza district revealed some areas were the value chain required strengthening. The current orange value chain system has a number of actors namely; agro suppliers, producers, middle men, transporters, traders and the consumers along with various chain supporters and

influencers. The study into the value chain system revealed a number of interesting subjects of discussion. The discussion into this area will be approached through the use of the value chain concept.

The current value chain system (figure 4) is quite crowded with a number of actors undertaking roles that could very easily be integrated into a different level of the value chain without affecting its functioning. In fact it's opinion that this move would increases the current efficiency of the value chain rather than make it less effective.

The first consideration is for the role of the middlemen who carry out the function of brokers at the village level. The role of village broker could very easily be incorporated into the local trader's activities. These would shorten the value chain and ensure that there were more margins to share among the remaining actors. However it should be pointed out that increased margins do not necessarily pass over to the producers in the value chain but rather to the actor who is best placed to benefit from the changes to the value chain. Considering figure 5, it is noted that the act of eliminating the role of the middlemen (broker) would free up 2% of the chain generated gross margin to either the traders or the producers. However given the observe influence of the traders on chain governance issues, it is my strong believe that the margins would be incorporated into the trading profits of the traders rather than the farmers. The farmer – trader relationship is one that involves the farmers being submissive to the traders. This is because in general the farmers appear to need the traders more than the traders rely on a particular farmer. Another issue is that farmers do not organized well due to the fact there are only around 1100 farmers joining farmer association that can benefit farmer getting higher price by marketing their oranges together. All these issues and others were considered in designing and proposing the new value chain system as shown in figure 6 below.

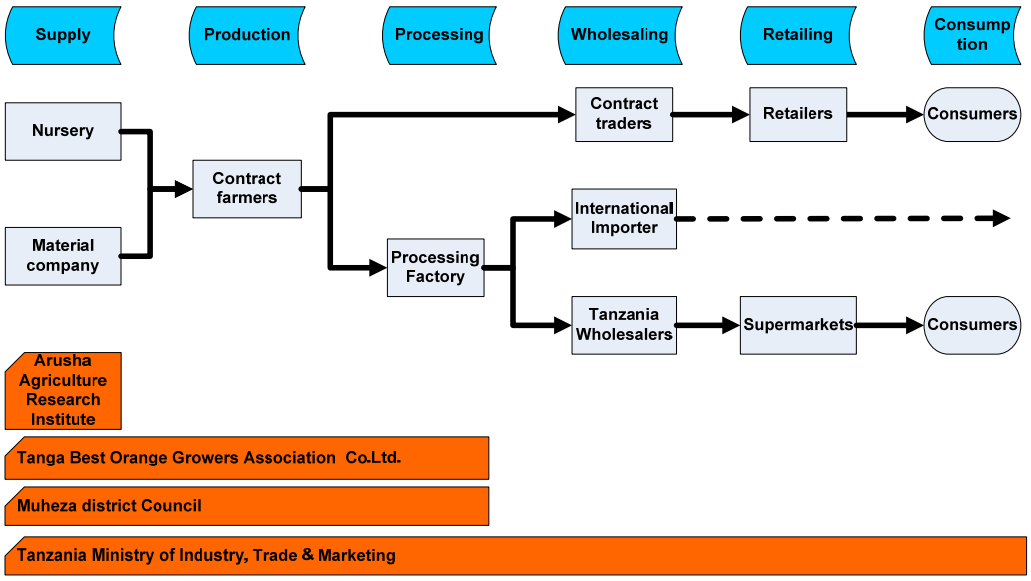

Figure 6 Proposed New Value Chain for handling oranges from Muheza

It is evident that the proposed value chain is shorter with a number of chain actors having their roles integrated through forward and backward integration. The role of the middlemen is incorporated into the function of the trader by contract. It is also proposed to develop the processing industry in Tanga so as to strengthen the value chain. In fact there is an opportunity for potential investors who are interested in establishing business in orange chain in Tanga since the investor could use some facilitating policies from the project of Segera Integrated Market as introduced at 2. 5.

The roles of the most significant chain supporter are not adjusted but there is reorganization in the sphere of influence awarded to each of the chain supporters. Most noticeable is the fact that the role of Arusha Agricultural Research Institute has been confirmed to dealing with the nursery establishment and supply of planting materials. This is based on the fact that one of the constraints in the sector as revealed in the study was farmers planting orange orchards without being sure of the variety used which affect the seasonality planning within the industry much later on. Meanwhile TABOGCL is expected to expend and play an increasingly important role in organizing orange farmers together to develop a contract farming with traders and processors.

5.6 Business Environment Analysis

The study examined the business environment within Muheza district, Tanzania through the use of the PESTE analysis. It was revealed that there were a number of challenges that the industry faced in the areas of political, economical, social, technology and environmental. The challenges are summaries in the list below.

5.6.1 PESTE Analysis

i. Political

- Stable government and national atmosphere of developing economy
- Special department of Tanzania Investment Center for one stop registration procedure
- Various incentives on availability of land, exemption of tax etc.

ii. Economical

- Increasing growing rate of economic
- Increasing consumption but still low purchasing power domestically
- Adequate supply of fruit
- Cheap price of fruit but low quality
- Cheap labor but unskilled

iii. Social

- Warm welcome of foreign investment from central to local government

- Friendly people
- Some extent corruption within government

iv. Technology

- Low application of technology in fruit farming
- District extension office and Orange Farmer Association can provide training programs
- District nursery service
- Sokoine University of Agriculture and Arusha Agricultural Research Institute can support on cultivating seedless variety and application of growing technology

v. Environmental

- Favorable climate for growing fruit, orange in Muheza have higher sugar content than that in other areas because of the high temperature and …….
- Geographical features, Tanga and Dar es Salaam port are the gate of East Africa Community

5.6.2 Risks Analysis

- High cost of transportation at rain season for collecting fruit
- Insufficient supply of fruit at out of season: March and April
- Availability of own plantation
- Commitments of contracting farmers in quality control of fruit
- Ability of adaptation of technology
- Stable and enough of supply of electricity power

CHAPTER 6 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The research examined the orange value chain within Muheza District in Tanzania and after a detailed study of the various actors a number of conclusions were drawn. The study revealed that there were a number of constraints within the value chain but solutions were readily available. It was noted that the orange sector in Muheza is facing competition from imported oranges for the up scale markets within the city. The study further revealed that seasonality affected the gross margin obtained by the different actors. It was noted that the actors were able to receive higher gross margins during the peak season much as prices were inferior in comparison to the low season.

In regards to the distribution of margins within the value chain to the different actors, it was revealed by the study that the retailer earn a higher margin compared to the other chain actors. The retailers earned over fifty percent of the value chain total margin with the farmers earned a smaller fraction. The study revealed that the export market was more profitable in comparison to the domestic market. In designing a proposal for the new value chain, it was noted that the production system of oranges under the new model would involve changes within the chain. The study ended by suggesting areas under which interventions into the value chain could be implemented.

6.2 Recommendations

The study was conducted as a reconnaissance research into the orange value chain systems in Muheza. It's the recommendation of the author that further research be carried out into the orange value chain with a detailed focus of the feasibility an international investment into the sector. Basing on the results of the concluded study, it is evident that the Muheza area has a number of features that could be of beneficial standing to an investment. A further study into the value chains will enable the formulation of a project plan with clear financial estimations. It’s at this point that the economics of such an investment could be critically examined. However based on the information obtained, the study was able to make the following recommendations.

- The Muheza citrus industry needs to continue strongly focusing on developing and selecting specific orange varieties to meet the taste and other consumer preferences in markets. This could be carried out through a private public partnership program coordinated through the Arusha Agricultural Research Institute. Planting of selective varieties would enable the industry plan better on how to manage the seasonality challenge by employing varieties with different ripening cycles. It would also enable of the development of oranges that meet the demand of the market and are able to perform highly in the climatic region of Muheza.

- According to the findings of the research it would be advisable to promote the setting up of commercial orange processing facility within the Muheza region. The business environment assessment of the area points towards an orange processing industry being viable in the Tanga. In addition a number of the influential stakeholders within the orange industry of Muheza would greatly support the venture hence increasing its ability to be achievable. The processing plant would further help to increase the demand for the oranges during the peak season which would in return stabilize the market price because higher demand during the season of plenty will safeguard the market price from dropping low. This would indirectly benefit the farmers hence ensuring that the business of orange growing is more profitable. Increased income to the farmers would improve their ability to incorporate the use of agro input to attain higher yields fro improve productivity. However the industry could consider the option of marketing the derived products as organic and at a higher market price. Regarding on the product mix for potential processing factory, the arrangement could combine orange, mango, pineapple and Banana together during the different seasons. April to August is for orange, October to January is for mango and pineapple, while banana can be obtained around the whole year. However this study was conducted as a reconnaissance research into the orange value chain systems in Muheza. It is the recommendation that further feasibility research be carried out into the orange value chain with a detailed focus of the an international investment into the processing industry.

- There is a need to introduce a reliable and reputable quality control system for the oranges that are derived from Muheza region for export into the regional markets. This is one of the factors that are challenges to the development of the industry into an international orange business center. The global export of fruits and vegetables is a tightly controlled business on the international market with the need for quality assurances in the form of sanitary report, HACCP certification, and ISO certification among others. The quality requirements have been a handle to a number of export ventures from Africa in the past and one of the ways around the problem is to ensure that the industry is quality conscious right from the beginning. In the case of Muheza, introduction of quality systems would be initiated among the large contract farmers and offer of a higher market pay for their produce could be used as a motivation for the growers to embrace the system. The industry could as well encourage the introduction of quality performance indicators within the contracts of the large contractual growers, which is lacking at the moment. The small and medium scale farmers would then follow the lead of the large farmers once the quality system is up and running. The implementation of a quality system would then allow for the branding of oranges that are harvested under the quality system for consumers will identify with the brand given its

reputation.

The designed processing company can get oranges, bananas and mangos in Muheza, Korowge and Handeni districts in Tanga region. Pineapple can be procured from Bagamoyo in Coastal region which is not so far to Segera market. Tables below show the production area and production of oranges, pineapple and Mangos in Muheza, Handeni and Korowge districts in Tanga region and Bagamoyo district in Coastal region respectively.

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APPENDICES

Appendix 1 Table of people interviewed

Name	Position	Area
Mr. Peter S. Mbangulila	Regional trader officer	Tanga
Mr. Ephrem William Kalimalwendo	District executive director	Muheza
Mr. Mtunbi Mohanmode	Agriculture officer	Muheza
Mrs. Nahida Mbwanna	Agriculture officer	Muheza
Mr. Isaya Mpulikiu	Manager of Tanga Association of Best Orange Growers Co.Ltd.	Muheza
Various traders		Muheza
Transporters		Muheza
Retailers	Mgandini market	Tanga
Farmer and trader	Kwabada village	Muheza
Mr.Ambokile M.Matola (farmer)	Chairman of Muheza Orange & Vegetable Growers Office	Korowge
Mr.Juma Mwanga	District trade officer	Muheza
Mrs. Aziza Sophia Omari	Branch officer of Entrepreneurs Development Information Bureau	Muheza
Mr.Lonatone Lvmambo	supply manager of UNNAT Processing ltd.	Morogoro
Pro. Damas Pluiling	Sokoine University of Agriculture	Morogoro
Mr. Bues	District chairman of Chamber of Commence Industry of Agriculture	Muheza
Mr. Saf A. Shemhina	District Extension officer	Muheza
Mr. David Kiama	Branch manager of NMB bank	Muheza
Mr.	Manager of S.D. Savant Supermarket	Tanga
Mr.B.P.Lyimo	Principal trade officer, Tanzania Ministry of Industry Trade & Marketing	DAR
Mr.Julian K. Gutta	Economist, Tanzania Ministry of Industry Trade & Marketing	DAR
Mrs.Fatuma Hamisi	Business Information officer, Tanzania Chamber of Commence Industry Of Agriculture	DAR
Mr. Mathews Kaubo	Branch supply and marketing manager of Shoprite	DAR
Mrs.Prisca Mnueti	Branch marketing manager of Malasoka supermarket	DAR
Mr.Salum Mohanmed	Branch supervisor of Bakhresa	DAR

Appendix 2 Trader Questionnaire

Name
Questionnaire code
Place of coming from

1. How many years have you involved in this orange business?
2. What areas do you get your orange in Tanzania? Which area do you get most orange in? %

3. Which varieties do you trade most? Why?

4. Where do you sell your orange?

5. Which months are the high, low and out of orange seasons?

6. How many volumes, what varieties and price do you trade in 2005,2006 and 2007 at high and low seasons respectively? Estimated 2008

Varieties												
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
Volume (high)												
Price												
Volume (low)												
Price												

7. How do you get your buying and selling price? Who does decide the prices? What percentage can you influence buying and selling price?
8. How do you communicate with your clients? How often?
9. What do you do when out of orange season?
10. Do you get orange from farmers or middleman here?
11. Are your suppliers same or not each year and why?
12. What are the standards when you choose suppliers?
13. Do you have some quality requirements when purchasing orange in terms of variety, size, and package?
14. If you get orange from farmer or middleman from small fuso, where and how do you bulk them into big fuso?
15. Do you need to arrange pickers, accounting man, loading and unloading (bulking) man? **How** and what are these cost?

Picker	Cost/fuso, piece	
Accounting man		
Loading		
Bulking		

16. What kinds of vehicle do you use for transportation?
17. Who do arrange them and how?
18. What is the price of transportation? (Fuso, small fuso, piece, ton)

Vehicles	2005		2006		2007		2008	
Seasons	High	Low	High	Low	High	Low	High	Low
Small fuso (Muheza)								
Dar (fuso)								

19. How many days do you take to fill one fuso (high and low seasons)?
20. Do you transport the different varieties separately? How?
21. What kind of package do you use for transport orange?
22. Normally what is the percentage of loss during transportation till finishing selling?
23. How do you feel the availability of fuso at busiest season? How many fuso working per day at busiest season?
24. What kinds of money do you need to pay for orange business in Tanzania? And how much?

Items	2005		2006		2007		2008	
Seasons	High	Low	High	Low	High	Low	High	Low
Cess								
Levy								
Other cost								

25. What kinds of payment methods do you use in your business?
26. Who are your clients when you arrive at destination?
27. How do they sell orange there?
28. Do you need to sort, pack orange before you sell to clients?
29. Do you have employees for your business? What do they do? Salary?
30. Can I know your selling price and retailing price in other cities?

Items	2005		2006		2007		2008	
Seasons	High	Low	High	Low	High	Low	High	Low
Selling price								
Retailing price								

31. Do you know some traders selling orange to Middle East countries, Uganda?

31a. If yes, are the varieties same or not?

32.How many days can oranges store at normal temperature?

33.What problems do you have in your orange business here?

34. What advantages and disadvantages do you think Muheza has in orange industry compared to other countries and other regions?

35.How do you think the future of orange industry in Muheza? Do you know why here is no processing juice factory?

36.What fruit or product is a good choice for out of orange season and why?

Appendix 3 Orange Juice Processor Questionnaire

Company name
Location
Owner
Interviewee

Factory

1. When was this factory built? How long time had it taken from starting building till finishing?
2. How many areas does this factory occupy? How many plants, lines and how many square meters?
3. When did this factory start to produce product?
4. What is the capacity designed?
5. How many employees? Plant workers and management staff?

Production

1. What kinds of product do you produce currently? Series?
2. How do you arrange the production plan yearly (Types at high and low orange seasons)?
3. What are the production volumes of 2005,2006,2007? (Peak time and low season)
4. How many liters juice can you get from 1 kilogram, 100 kg, and 1000kg oranges?
5. Theoretically, what is the percentage of profitability of making orange juice?
6. Do you have price list of your product?

Marketing

1. Where have you sold your product? And how? By contract, salesmen, buyers coming by themselves?
2. What are the volumes of product sold in 2006,2007? (high and low season)
3. What kinds of product are sold most? Percentage compare to whole product.
4. Have you received some feedback from your clients in terms of preference of customers, price, package, delivery time, shelf life and taste? What are the results?
5. What is the method do you use between your company and buyers? Does it work well? Are you and buyers satisfied with this payment?
6. What kinds of promotion have you used for your products?
7. Who and how arrange the transportation when you sell juice? And the cost?

Supply

1. Where do you get your fruit and purchasing price (high season and low season)?
   1) %
   2) %
   3) %

4) %

2. What are the payment methods do you use for purchasing orange?
3. Who and how to arrange the transportation when you purchase orange? And the cost? (High and low season)
4. How many fusoes were used at peak time? Were all Fusoes arranged locally?

Gross margin analysis of orange juice (kilogram, ton, batch, year)

Items			
Oranges			
Purchasing price			
Transportation (purchasing)			
Transportation (selling)			
Cess			
Levy			
Power			
Preserver			
Water			
Bottle			
Tax			
Total cost			
Volume of product			
Selling price			
Gross margin			

How much is the gross margin percentages of other product?
What investment incentive did you receive? Did you get all incentive according to national and local policies?
How about the supply situation of power and water? quantity and quality?

Opportunities
Constraints
Strengths
Weaknesses

What is the future of factory? Do you have some intervention for constrains or plan for the future?

Why did this factory built at Morogro not Muheza?

Appendix 4 Key informant interview questions

1. General information

1.1 What kinds of fruit do farmers grow in Muheza? (Sub varieties)
1.2 How many hectares the fruit are grown respectively in Muheza?
1.3 What are the production and yield of the fruit?
1.4 What is the trend of production recently? /Do you have the recent figures of production?
1.5 What is their harvesting seasons respectively? (Varieties)
1.6 Can traders do make business during the whole year? / What is the product mix ensuring business can be run during the whole year?

2. Marketing

2.1 What are the percentages of citrus marketed internationally and domestically?
2.2 What is the recent trend of this market? / Can you have recent figures of international and domestic trade of citrus?
2.3 Do the growing and consumption varieties changed recently? If yes, what is the change?
2.4 What are the prices in the different seasons and varieties?
2.5 What are the trends of price of citrus in different seasons recently?
2.6 How the climate and weather influence the production and price of citrus?
2.7 What policies and regulations do you have in fruit/ citrus industry?
2.8 What supports have the district government done/ doing/will do in terms of technologies and finances?

2.9 Can you introduce some policies on foreign investment both in trade and processing of fruit industry?
2.10 What are the tax's ,cess related to fruit industry?
2.11 Is there policy on foreign employee in Muheza? / Is it necessary to apply work permit for foreign employee working here? Which department is charge of it and what is the procedure?
2.12 What is the average salary for local employees in Muheza?

3. Chain and actors

3.1 Can you introduce how the citrus are sold from farmers to consumers?
3.2 Normally what intercrop do citrus farmers grow? (Percentage)
3.3 How do they harvest and sell citrus/pineapple? What are the prices? What is the way of payment?
3.4 How much margin share do farmer can get from fruit (citrus/pineapple, etc)?
3.5 Is there difference of margin share between the different seasons and varieties?
3.6 How many traders in fruit/citrus /pineapple industry in terms of sizes, business

regions(middle east)?

3.7 Do they have trader union? If yes, how does it work? How can reach them?

3.8 How do traders operate their business in terms of collecting, bulking, packaging, transporting fruit and payment? Do they have own warehouse or store fruit? Can you help arrange the survey of 20 traders in terms of size and business regions?

3.9 How can they arrange the logistics? Ownership of trucks, price.

3.10 What is their margin share in different seasons? Purchasing and selling price,cost

3.11 What is the selling price of fruit in retailer/shop, vendor, and supermarket? Cost, margin share, store conditions.

3.12 Is there quality system applied in fruit industry? (Citrus, pineapple) Who is charge of the quality matters? Regulation?

4. Processor

4.1 Is here processing juice factory? Why?

4.2 Do you know something about the processing factory in Morogro?

4.3 If an international company wants to invest in processing factory, what support will you provide?

5. How do you think the opportunities and constrains of fruit industry in Muheza district?

6. What things do need to be done to make quick progress of fruit industry here?

7. Can you tell us something about the infrastructure condition here? Road, communications, water, power/electronics.

Appendix 5 Orange Transporter Questionnaire

Name:
Registration location:
Working location:

1. What kinds of vehicle do you have for transportation?
2. How many are the vehicles?
3. How long have you owned them?
4. What kinds of goods do you transport using your vehicle?
5. What percentage income do you get from the different goods transportation respectively?
6. What is the standard volume of your vehicle? And normally how many tons do you load? How many pieces? Do you need to pay more for the overloading or be fined?
7. Do you responsible for loading and unloading? If not who do it and the cost?
8. How many volume did you transport oranges during the last three years? (2005,2006,2007)
9. What months is the busiest time for your transportation? And how much volume did you transport during this months?
10. What are the places do you transport orange to?
11. What are the distance and price at high and low season respectively? (Per kilometer?)
12. What is the percentage transportation among the different destinations?
13. If transport orange only within Muheza for collecting, how many times can you return one day? What is the price?
14. Can you estimate the number of vehicles working for orange transportation in Muheza at peak season and low season (fuso and small fuso)?
15. Among them, how many are owned by people living Muheza, Tanga, other cities and Kenya?
16. Are the vehicles enough for transporting orange during peak season?
17. How much the cost for maintenance of your vehicle per year? (License, repair, renew)
18. How much fuel do you use per kilometer or arrival DAR? And what are the prices 2005,2006,2007?
19. What is your salary? 2005,2006,2007
20. How many days do you work per week, month?
21. Do you know some logistics company in Tanzania?

Appendix 6 Factories of processing fruit & vegetables in Tanzania

Mohammed Enterprises Tanzania Ltd
7th Floor PPF Towers
Junction of Ohio Street/Garden Avenue
Tel: +255 22 2122837 / 854 / 830 / 819
Fax: +255 22 2122843
Email: info@metl.net

Bakhresa Foods Products Ltd
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Fax: +255 22 2861140
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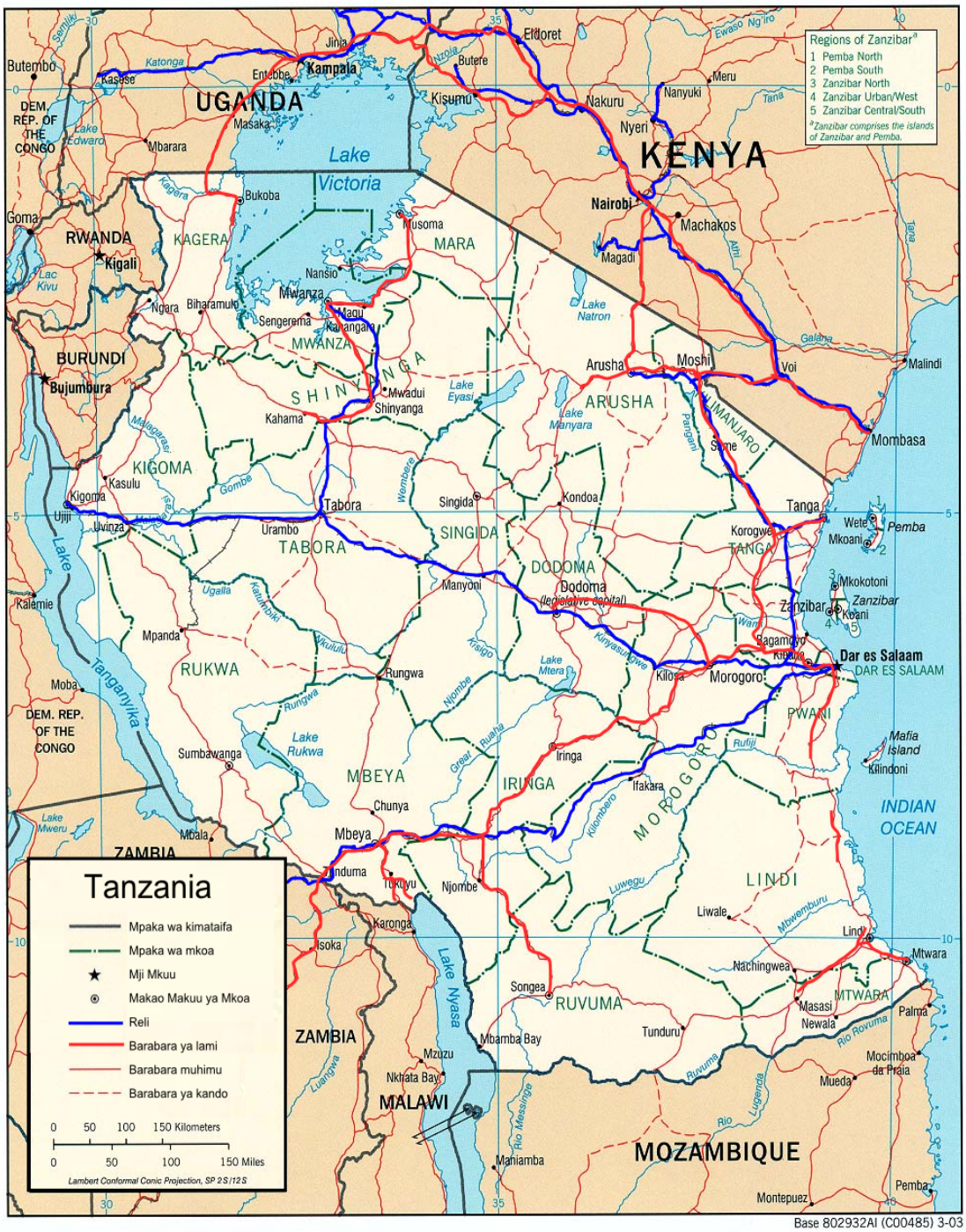
Email: info@bakhresa.com

Dabaga Vegetable & fruits Canning Co. Ltd
Tel : +255 22 2130651
Fax: +255 22 2115233
Email: dabaga@cats-net.com

Quality Food Stuff
Tel: +255 24 2233820
Fax: +255 24 22230052
Email: suma_ltd@yahoo.com

Appendix 7 Transportation map of Tanzania



Appendix 8 Countries imported of orange juice in Tanzania 2007

LABEL1	LABEL2	CIF Value (TSHS.)	Net Weight (Kg)
Oranges, fresh or dried		20,004,124	28,696
Oranges, fresh or dried	UNITED ARA	115,329	120
Oranges, fresh or dried	SOUTH AFRI	19,624,226	27576
Oranges, fresh or dried	ZAMBIA	264,569	1000
Unfrozen orange juice,		503,818,982	703,889
Unfrozen orange juice,	UNITED ARAB	85473882	230,296
Unfrozen orange juice,	CYPRUS	629105	7805
Unfrozen orange juice,	EGYPT	6929025	12004
Unfrozen orange juice,	UNITED KIN	12614926	5724
Unfrozen orange juice,	INDONESIA	456073	1757
Unfrozen orange juice,	IRAN	119870	1166
Unfrozen orange juice,	ITALY	2333111	1114
Unfrozen orange juice,	KENYA	106366465	108,843
Unfrozen orange juice,	NETHERLAND	20016739	8884
Unfrozen orange juice,	PORTUGAL	9653783	9295
Unfrozen orange juice,	SAUDI ARAB	6584944	11950
Unfrozen orange juice,	TURKEY	5390020	5211
Unfrozen orange juice,	SOUTH AFRI	243043207	296,615
Unfrozen orange juice,	ZAMBIA	4207832	3225

Source: Custom & Excise Department, TRA 2007

Appendix 9 Roads in Muheza