

**FACTORS INFLUENCING MARKETING OF VEGETABLES
AMONG SMALL HOLDER FARMERS: A STUDY OF TOMATO
VALUE CHAIN IN RUVU KIBAHA DISTRICT**

By

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**A Dissertation submitted in fulfillment of the Requirement for the Award of the
Degree of Master of Business Administration (MBA) in Corporate Management
of Mzumbe University**

2020

CERTIFICATION

The undersigned certifies that, has read and hereby recommends for acceptance by the Mzumbe University, a research/thesis entitled “*Factors Influencing marketing of vegetables among small holder farmers: A study of Tomato value chain in Ruvu Kibaha District* as a fulfillment of the requirement for award of the degree of Master of Business Administration (MBA) in Corporate Management of Mzumbe University.

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DEDICATION

I dedicate this dissertation to my son Faraji Kiroshi Mrutu

ABBREVIATIONS AND ACRONYMS

ASP	Agriculture Strategic Plan
ESRF	Economic and Social Research Foundation
FAO	Food and Agriculture Organization
FAOSTAT	Food and Agriculture Organization Statistics
HODECT	Horticulture Development Council of Tanzania
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SPSS	Statistical Package for Social Sciences

ABSTRACT

This study intended to look into factors influencing marketing of vegetables, looking into tomato value chain specifically to small holder farmers located at Ruvu Chini at Kibaha District council. The objectives were to investigating influences made by marketing information and transactional cost on the market of Tomatoes also challenges these farmers face and what is the role of government in vegetable farming.

The research approach was both qualitative and quantitative. Data was collected through questionnaires and interview to a total of ninety three (93) respondents including smallholder farmer, agricultural officer and trade officers. Agricultural officers and trade officers were purposively selected while small holder farmers were conveniently selected. Data analysis was analyzed quantitatively through SPSS and qualitatively through discourse analysis. Ordinal regression was used to determine the relationship and influence of marketing information and transactional cost on ordinal outcome (vegetable marketing measured in scale of 1-3, where 1=Weak, 2=Moderate, 3= Strong)

Findings revealed that, for every increase of transactional cost causes decrease in the marketing of tomatoes. Also access to market information positively influences vegetable marketing. The government main role is to enforce policies and creating good environment for farmers. However, farmers also declared that the government's main role should be to protect small holder farmers' rights since the market of vegetables in Tanzania is a free market.

Recommendations are that, the government should enforce laws that empower small holder farmers of tomatoes like how it is done in other crops like cashewnuts and this can be done through strengthened collaboration with public-private partnership with existing stakeholders.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Agriculture remains the important sector globally, since it contributes towards food security, poverty alleviation, and economic growth. Agriculture outlook 2016-2025 reports that, agriculture contributes to 15% of GDP (FAO, 2016). It is considered to be backbone of several African economies (Gunasekera & Newth, 2015). Several people rely much on agriculture for their livelihood, it has been noticed that about 86 percent of the rural people depend on agriculture as a livelihood option and it provides jobs about 1.3 billion of smallholders' farmers and landless employees (Malherbe & Marais, 2015).

Tanzania is focusing on agriculture as the main source of economic development. Agriculture is estimated to contribute to one- third of GDP and provides employment to 75% of Tanzanian population (ASDS II, 2016). With the current industrialization as main driver of economy, agriculture plays a major role in fulfilling industrialization initiatives as it is the main input in the manufacturing sectors. Both the government and the private sector have joined hands to increase agricultural business investment (Mgaya, 2016). Established policies focus on providing enabling environment for agricultural growth.

Tanzania is focusing on agriculture as the main source of economic development. Tanzania recognizes the contribution made by small holder farmers in the whole sector. Small holder farmers contribute to 75% of the agricultural output and mainly for home consumption (Jamie & David, 2016). Small holder farmers mainly grow food and staple crops with maize taking the lead of staple crop, followed by beans, cassava sweet potatoes and rice (Msami & Wangwe, 2016). These farmers dominate in agricultural production and the trend is now towards horticulture mainly fruits and vegetables due to the increase awareness of health benefits found in fruits and vegetables (Amao, 2018). Due to this production of fruits and vegetables had increased to due high demand in the markets especially supermarkets (ESRF, 2010).

Vegetables are considered to be the most important ingredient in human diet used for the maintenance of good health and prevention of diseases. Apart from the nutritional value, farming of vegetables has been indicated as main sources of employment for the entire population both in the urban and rural areas. Farming of vegetables acts as main source of employment due to the fact that it takes place in several rural areas and outskirts of urban in the form of backyard gardening used to supply fresh vegetables to the town market (Amao, 2018). As a result, vegetable farming remains important for socio-economic role for smallholder's farmers and nation at large.

Tanzania ranked the twentieth in 2000 to fifteenth in 2009, similarly, during this period, Tanzania remained in the top 20 vegetable producers in the world (FAOSTAT, 2013). To a great extent, the huge bulk of the vegetables in Tanzania (tomato) is a single most dominant vegetable crop (Mushari & Katsaruware, 2015). The area planted tomato in Tanzania is almost 26, 612 ha. Tomatoes contributed to a great extent highest percent of harvested quantity (314, 986 tons 64%) of the total harvested quantity of vegetables (ESRF, 2010).

The production and consumption of vegetables has been increasingly tremendously particularly in peri-urban and urban areas because of increase in disposable income (money left for use after deduction of all taxes) and consumer's nutritional awareness (Adeoye & Bala, 2017). This is due to the increase in demand for vegetables mostly in urban areas and outside the country and this is influenced by good climatic condition that favors the growth of vegetables throughout the year. The availability of suitable growing condition provides a great opportunity towards the development sustainable vegetable production. Furthermore, the presence of good extension services, constant supply of water for irrigation purpose and availability of quality vegetable seeds from recognized stockiest and research institute in the area also to a great extent support production of different vegetables on a continuous basis (ESRF, 2010).

It has been noticed that, fast growth of tourist hotels, green grocer shop, supermarkets and colleges in the area provides smallholders farmers of vegetables several opportunities to excel their vegetables as a result farmers generate a good

income. This in turn contributes to the introduction of new growing vegetable outlets which is called high value markets (Blandon & Islam, 2010). Only recently, vegetable business has gain momentum in the markets especially Dar es salaam ,Arusha, Mbeya, Morogoro and Zanzibar due to various reasons including increase of tourism activities and awareness of health diets (Mchenga & Abubakar, 2016).

Existing channels of marketing can be categorized into five chains: local market, regional market, national market, export market and supermarkets as explained earlier (Mayala & Bamanyisa, 2018). Local markets are run by mostly women and children both in a center market or by selling vegetables walking from street to street reaching consumers in their homes.

Dar es salaam market at “Kariakoo” is the largest market center which is also known as the national market. Crops and products from all around Tanzania regions and from outside Tanzania are mainly sold at “kariakoo” in wholesale but coordinated by a trade officer (Mayala & Bamanyisa, 2018). Wholesalers then sell to retailers who then sell products to consumers. This kind of arrangement is not regulated by law enforcement but rather on arrangements made by trade officers who control the market leaving farmers in a disadvantage position to have information about the market and its buyers. The marketing system is informal in such anybody can be a trader, retailer or producer. This kind of arrangement disfavors farmers mostly small holder farmers (Mchenga & Abubakar, 2016).

Regional markets are the most important markets in Tanzania, since they are easily accessible by farmers, traders and they are mostly for sale (Mayala & Bamanyisa, 2018). Traders at this market are credit buyers and farmers sell their products and get payments on their terms during negotiation. It is at these markets where small holder farmers engage mostly.

This study intends to investigate factors influencing vegetable marketing in Ruvu chini Kibaha District council. Looking into the influence of transactional cost and marketing information to the vegetable marketing, the role of government and challenges faced by small holder farmers in vegetable farming.

1.2 Statement of the problem

Horticulture in Tanzania is dominated by small holder farmers who contributing 70% of the whole vegetable production in Tanzania (Visser, 2015). Nonetheless, small holder farmers have no direct connection to regional and international markets thus, hindering their fully participation in the market, which in turn affects the whole value chain of vegetables (Missama, 2010).

According to National Horticulture Development Strategy 2012-2021, the sector is fast growing with an annual rate of 6-10% per annum (Horticulture Development Council of Tanzania (HODECT), 2012). Vegetable contributes to 50-60% of horticultural exports in Tanzania, and the remaining 40-50% is used for consumption (Embassy of the kingdom of Netherlands, 2017). This clearly shows that the local markets consume most of the vegetable production, in fresh form and a very small proportion is processed (Magesa, 2014). Despite having local consumers as the main market, produce of vegetable from small holder farmers is often lost after production due to perishability nature of vegetables.

Scholars have provided evidence of challenges in marketing of vegetables by smallholders farmers including; inadequate market information, lack of access to high value reliable market, poor quality of vegetables, price risk and uncertainty, poor communication, lack of bargaining power, lack of reliable transportation, distance from the market and access to market for their produce (Matsane & Oyekale, 2014; Misaki & Gaiani, 2016; Nyamba et al., 2016; raj, & Johar, 2017). Focusing on tomatoes, the major challenge in tomato marketing is oversupply caused by poor market information and inability to forecast (Mayala & Bamanyisa, 2018). Seasonality of tomato supply causes price fluctuation throughout the year.

Thus, the proposed study intended to investigate the factors influencing the marketing of vegetables among the small holder farmers in Ruvu Kibaha by using both quantitative and qualitative approaches.

1.3 Objectives of the Study

The main research objective of this study was to investigate the factors influencing the marketing of vegetables among the smallholder's farmers in the tomato value chain in Ruvu Kibaha District.

1.3.1 Specific objectives

The specific objectives of the study were to:

- i. To determine the influence of market information to the marketing of vegetables to the smallholders farmers.
- ii. To identify the role of government to the market of vegetables among smallholder farmers.
- iii. To determine the influence of transaction cost to the marketing of vegetables among small holders farmers.
- iv. To understand the challenges facing smallholders farmers in accessing market for their vegetables.

1.3 Research question

- i. what is the influence of market information to the marketing of vegetables to the smallholder farmers?
- ii. What is the role of government to the market of vegetables among smallholder farmers?
- iii. To what extent transaction cost influence the marketing of vegetables among smallholder farmers?
- iv. What are the challenges faced by smallholder farmers in accessing market of their vegetables?

1.4 Significance of the study

This study will enable and assists policy makers to improve and expands the operation of vegetables among small holder farmers in order to serve business

enterprises by providing advisory services to the business owner and establishing common market centers.

The findings are important to the Ministry of Agriculture, food, Security and Cooperatives and Ministry of Industry and Trade in planning, decision making to improve and expand the operation of small holder farmers on vegetables production and access to market. The sector might be use findings to reform strategic solution for solving problems related to access to market of vegetables among small holder farmers.

This study contributes towards a new body of knowledge that is currently inadequate in the existing literature. This study could also be important to researchers and academicians in a sense that, it enables access to reference materials for studies related to small medium enterprises.

1.5 Organization of the dissertation

This study investigated the factors influencing vegetable marketing, looking into the influences made by transactional cost and marketing information. Furthermore, the study explores the role of the government in vegetable marketing and challenges faced by small holder farmers of tomatoes. Chapter one explains the problem setting and gives background study of vegetable marketing, statement of the problem, objectives of the study, hypotheses and significance of the study.

Chapter two presents the literature review, comprised of the theoretical literature review, empirical literature review, research gap and the conceptual framework guide. Chapter three covers the research methodology comprising of the research design, description of study area, study population, sample size, sampling techniques, data collection methods used and the description of the data analysis process.

Chapter four presents the key study findings and discussion and the final Chapter five presents the summary of the study, conclusion, recommendations, limitation of the study and area for further studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed the relevant literature on factors influencing the vegetable marketing among small holder farmers. Sections are organized according to the research objective after giving an overview of information on marketing of vegetables among small holder farmers. Specific areas covered include: the concept of vegetable marketing among smallholders farmers; the types of small holders farmers, the importance's of marketing of vegetable to the small holders farmers; factors influence the marketing of vegetable among small holders farmers; and challenges facing small holder farmers in accessing market for their vegetables. It also presents theoretical literature review, empirical literature review, research gap and conceptual framework.

2.2 Definition of key terms

2.2.1 Marketing

Marketing refers to the process of anticipating the needs of targeted customers and finding ways to meet those needs profitably (Nyamba et al., 2016) . Marketing refers to the performance of all business activities involved in the flow of products and services from a point of initial production unit (farm/firm) into the hands of customers. Marketing can be as the task of creating, promoting and delivery goods and services to the consumers and business entities (Ponnusamy, 2016).

2.2.2 Smallholders farmers

The definition of the term small holders farmers differ among the nations and ecological zones due to different factors such as area cultivated crop type and production capacity of the farm.

In Tanzania context, farmers operating less than 3 hectares or 50 heads of cattle are considered to be small depending on the crop (Mayala & Bamanyisa, 2018). Ratnadiwakara (2012) stated that different resources and risk conditions better define

smallholders than simple measures of landholdings. In Nigeria, people who participate in the day to day activities by providing labor and management of farm or livestock can be considered as smallholder's farmers (Jamie, 2016).

Smallholder in the context of this study is a vegetable farmer with less than 3 hectares farm size, use household members as main labors and grow crops to sell, trade and consumer. Other characteristics include farmers with limited investment capital, face to meet the demand in the market, have unreliable access to market , have low production and most cannot compete in the market due to low quality of produce (Magesa et al, 2014).

2.2.3 Vegetable

Vegetable refers to the edible succulent part of plant or portion of its consumed raw or cooked, generally with a main dish, in a mixed dish as appetizer or in a salad (Kapoor & Kumar, 2015) . Vegetable comprises edible and stalks, roots, tubers, bulb, leaves and flowers. Vegetable can be eaten either in raw or cooked and play a fundamental role in human nutrition, being mostly low in fat and carbohydrates with high vitamins, minerals and dietary fiber.

2.2.4 Vegetable Marketing channels

Marketing channels are route that a vegetable product flows from the producers (in this study the small holder farmers) to the consumers. Marketing channels of vegetables in Tanzania starts at the farm to the end consumer, moving through traders in an informal transactions (Mutayoba & Ngaruko, 2015).

The market center for tomatoes in Tanzania is normally in a nearby location to the farmers so as to allow easy access of the market. Such farmers usually sell their products either from the farm place or transport it using bicycle, motorcycle or animal power driven carts to the market center. These local markets differ from the national market “kariakoo” by their limited number of traders, having small holder farmers as the key suppliers and mainly come from the nearby villages while the national market comprises of both large and small scale farmers from all around Tanzania regions. Moreover, the farmers do not interact directly to the consumers,

instead there is an intermediary person who performs variety of functions and most of the time dominates the market. These intermediaries sometimes are termed as wholesalers, traders and brokers.

2.2.5 Tomato Value chain actors

Tomato value chain actors are main contributors of activities done in farming tomatoes from the beginning to the end use and beyond (Mutayoba & Ngaruko, 2018). These actors include farmers, traders, wholesalers, processors and retailers (Siam & Abdelhakim, 2018).

2.3 Theoretical literature review

2.3.1 Transaction cost theory

Jagwe et al, (2011) explain upon doing economic exchange, there are various costs involved, such costs are known as transaction cost. Such costs includes, information search cost, policy and enforcement costs, bargaining and decisions cost, or other may group such costs in variable and fixed costs. The cost is influenced by behaviors of the involving partners, their life style and social connection between them (Jagwe et al, 2010).

In order to improve production, it is advised to reduce transaction cost of the service (Jagwe et al. 2010). Transaction cost theory had been coined by Ronald Coase in 1937. The researcher developed that a theoretical framework for predicting certain economic tasks would be performed by firms and when they would be performed on the market. Also introduced on transaction activities directly associated with cost such as negotiation, contract enforcement, and policy making, searching for information to whom to deal and sourcing. On the other hand, transaction cost reasoning became most widely known through Oliver E. Williamsons transaction cost economics. Williamson in 1970 came up with scientific result of his empirical evidence that focused on suggested suitable contractual agreement in solving the problem interrelationship between contractual parties, determinants of the transaction cost and specific assets which needs governance structure to reduce costs associated with transaction in an integrated firms.

This theory is relevant with study since it addresses the constraints the small holders farmers facing when sell their products at low price while incurring a lot of cost when searching information of best seeds, manures, pesticides, plough tools, labor and land fees after growing tomato should incur cost of harvesting tomato, storage facilities and transportation cost until the tomatoes reach to the targeted market and all the cost are bearable by the farmers while the market price of tomato several time tends to be low as a result smallholders farmers remain poor.

Transaction cost theory focuses on cost minimization, as explained by different scholars to an extent that, it neglects the awareness of managers of the firm or does it include managers' awareness during cost reduction (Kessler, 2017).

This theory, understates the cost of organizing due to focus on reducing the cost of operations. This compromise the quality of firm's production ad allows room for insufficiency. It neglects the role of social relationship in economic transaction. For a better economic transaction, social relationship is very important for building trust and focusing on long term productivity. Upon focusing on transactions, such social relationships are compromised and acting partners will not wish to extend their economic transaction due to lack of trust.

2.4 Influence of marketing information to the smallholders farmers

Market information remains the important engine towards small holder farmers by ensuring constant supply of market information to the farmers with regard to vegetables price, access to farm inputs and agricultural extension services. Available market information can enable the smallholder's farmers to be guided to select quality seeds, facilitate pricing decision at all points along marketing chain, lower risks for all market transactions and improve flow of commodities from rural to urban areas (Matsane & Oyekale, 2014).

Marketing information guides farmers in making informed decision, assist farmers for planning at pre-planting stage and sell the surpluses that have been produced, contrary to that, in the absence of marking information, the retail end of the farming industry does not respond to supply and demand (Nyamba et al, 2016) .

Market information has a great influence on the participation of small holder farmers in the vegetable market (Mukarumbwa et al, 2018). On availability of such information, small holder farmers are able to know which market channels suite them the most and make decision on the market channels and even get access to urban markets. These help farmers to analyze which channels will give them profit and hence small holder farmers increase or decrease productivity depending on the situation at hand.

Access to timely market information is very crucial to small holder farmers as it prevents loss of money during transactions. Having a current information of market allows small farmers to decide whether to farm or even harvest in that particular period without risking harvesting in times of glut and products ending up being destroyed (FAO, 2011). Agriculture transaction are better done when there is enough information by both parties, and it is likely the side with more current (Tembachako & Katsaruware, 2015) information on the market status is better in making decisions that will lead to profit gains.

In times of market instability, market information can help small farmers entering in the market and also be competitive. But access to such current information is of challenge to small farmers as they lack resources to enable them to monitor market on regular basis that is why, they are highly dependent on information from traders or market officers (Arah et al, 2015).

2.5 Transaction cost influencing marketing of vegetables among smallholder's farmers

Transaction cost can be categorized into observable and unobservable transaction cost (Ratnadiwakara et al, 2012). The observable transaction costs comprises marketing costs such as transport, handling, packaging, storage and spoilage are visible when transaction takes place while unobservable transaction cost comprises cost of information, bargaining and enforcement of contract (Pingali et al, 2019). Transaction cost comprises information and search costs in relation to price, quality,

quantity and durability of the product, negotiation, contracting (legal) fees, monitoring and enforcement cost, communication charges (Jagwe et al, 2010).

Failure in agricultural market is largely being influenced by high transaction cost caused by differential household characteristics (Pingali et al., 2019). An increase in transaction cost deters entry of smallholders of vegetables into the market and withdraws them from commercialization in agriculture. Price of transporting products changes along the transport chain, and it may double depending on the season of harvest, in scarcity season price doubles and this causes changes high inflation of price of products in the market (Tembachako et al, 2015).

With the rise of modern food system, scholars have explained a new set of transaction cost that has risen because of standards requirement in terms of quality, size and delivery (Osebeyo & Aye, 2014). Final consumers have also shown interests in paying for products with attributes of quality, taste and good size. Any attribute less to these standards become weak in the market has hence cannot compete effectively (Adeoye et al., 2017). Small holder farmers, are used to traditional modes of production and cannot meet these demands of the new modern food system, that is why small holder farmers do not participate fully in the competitive agriculture market.

Transaction cost affects the choice of market channels small holder farmers have, because farmers tend to spend a lot of their time searching for market information mainly price and market in that particular time (Gebre & Ph, 2019). This causes small scale farmers to interact with multiple brokers/traders/middleman in searching for the right information which will input to profit gaining for farmers (Mwagike & Mdoe, 2015).

Transaction cost also differs with the location of small holders farmers. Farmers in high potential area tend to have easy access of production inputs and markets and hence the transaction cost is low. But farming in area of low potential, access to input requirement becomes very difficult, thus farmers have to incur more cost to access these requirements (Ratnadiwakara et al, 2012). Transaction costs related to

accessing market and price information tends to be high, poor infrastructure increase time and therefore cost also increases.

Scholars have also explained that, transaction cost vary by products. Products which are perishable like vegetables tend to increase transaction cost. Perishable products are involved in much other cost, including storage costs and transporting to the markets as the need higher cooling system that would prevent the products from rotting (Ratnadiwakara et al., 2012). This is important to farmers because it affects buyers behavior as they will act opportunistically to products and sometimes defaulting contracts made earlier.

Moreover, transaction costs are associated with age, gender and education level. Age defines are much experience the farmer has, and this will influence his/her decision making process associated with farming. Education is also key in reducing transaction cost as the higher the education the less time taken to seek information and hence cost involved is lowered (Osebeyo & Aye, 2014).

Reducing transaction costs is named to be critical among other factors in aiding small holder farming in marketing their products. Lowering transaction cost through linking small holder farmers to market through formal platform may influence marketing of vegetables to small holder farmers as they will be eager to participate in such opportunity.

Higher transactional cost to small holder farmers are caused by low economies of scale, low bargaining power, poor access to markets and information which results in poor price and quality knowledge to small holder farmers (Pingali et al, 2019). As elaborated earlier, transaction cost are said to increase when access to various inputs is insufficient, including access to source of water, manure, pesticide, good infrastructure, market and market information.

2.6 Challenges facing smallholder's farmers in accessing market for their vegetables

Despite the fact that marketing is important to the smallholder's farmers, to great extent smallholder farmers still find it difficult to participate in market, particularly when facing pressures from market liberalization. It has been seen that transaction costs barriers in market participation of smallholder's farmers in the northern province of South Africa. Marketing conducted by smallholders farmers is constrained with poor infrastructure, distance from the market, inadequate market information and lack of bargaining power along with several credit bound relationship with buyers has contributed to farmers exploitation during the transaction whereby most of the farmers become price takers (Osebeyo & Aye, 2014)

Matsane and Oyekale, (2014) estimated that about 25% and 40% vegetables is lost after harvest and indicated that farmers experienced serious postharvest losses due to the poor post-harvest handling in Nigeria. Inadequate market channels and poor information regarding price are amongst factors affecting commercialization of agriculture (Ratnadiwakara et al., 2012). Marketing of vegetables to a great extent are highly affecting with low product prices, excess of intermediaries, poor marketing infrastructure, lack of marketing information, post-harvest losses and unavailability of marketing institutions responsible marketing vegetable products (Arah et al., 2015).

A challenge of strong market links is also persistent among many small farmers. Access to these market channels may lead to increased agricultural production and hence increase of economic activities in the particular society (Jagwe & MacHethe, 2011). Small holder farmers face market access challenges due to various reasons including lack of skills, poor market infrastructure and lac of mechanisms to access market information.

2.7 Tomato value chain from farmers to retailers

Tomato value chain in Tanzania is characterized by different actors who are involved from production, marketing and distribution to the final consumer. Moreover, domestic trade is the most important arena for key players and small holder farmers

play a major role producers of tomatoes in Tanzania and main areas of production are; the southern highlands, northern corridors and cost regions (Negasi, 2015). Majority of these small holder farmers have less than 2 hectares and are not connected to regional or international markets thus are limited to conduct selling or exporting tomatoes themselves.

In order to take part in regional and international markets, some small holder farmers form groups or join in cooperatives and supply to larger export firms under a specified contract (Embassy of the kingdom of Netherlands, 2017). The major actors in the tomato value chain are the producer, traders, middlemen, transporters and local authority (Nyamba et al., 2016).

Connecting farmers to retailers is done by trade officers who are the main negotiator of price, market and cash transactions. This also applies to large scale farmers who are also connected to the wholesaler or retailer through trade officers. Tanzania wholesalers of vegetable have to be licensed (Mutayoba and Ngaruko, 2018).

Vegetables contributes to largest percent of exports in Tanzania, in 2016 vegetables contributed about 60% of exports in Tanzania, and the rest 40% is contributed by fruits (Embassy of the kingdom of Netherlands, 2017). Export is facilitated by export agents who collect vegetables from wholesalers or direct from farmers.

2.7.1 Value chain stakeholders

Farmers are the main players in the value chain of tomatoes and they are supported by other players including the suppliers of different tools, fertilizers and seed, also by agriculture officers found at different levels of regions and Non-Governmental organization (NGO) that have mission to support farmers and help them increase their earnings (Nyamba et al., 2016).

Traders are important drivers of tomato value chain, they facilitate cash flow, market information and flow of crop (Mwagike & Mdoe, 2015). They are also known as market masters, they also arrange transportation service and some go as far as arranging for storage facilities like cooling containers during transportations since tomato is highly perishable crop (Negasi, 2015).

These are the final players in the chain, directly consuming tomato for various purposes. They include households and hotels or restaurants and even institution for example universities and hospitals (Negasi, 2015). In most cases, tomato is modified into other products and mainly tomato paste which is the most widely used product around the world (Adeoye et al., 2017). Tomatoes are purchased at least once a week by most consumers (Adeoye et al., 2016).

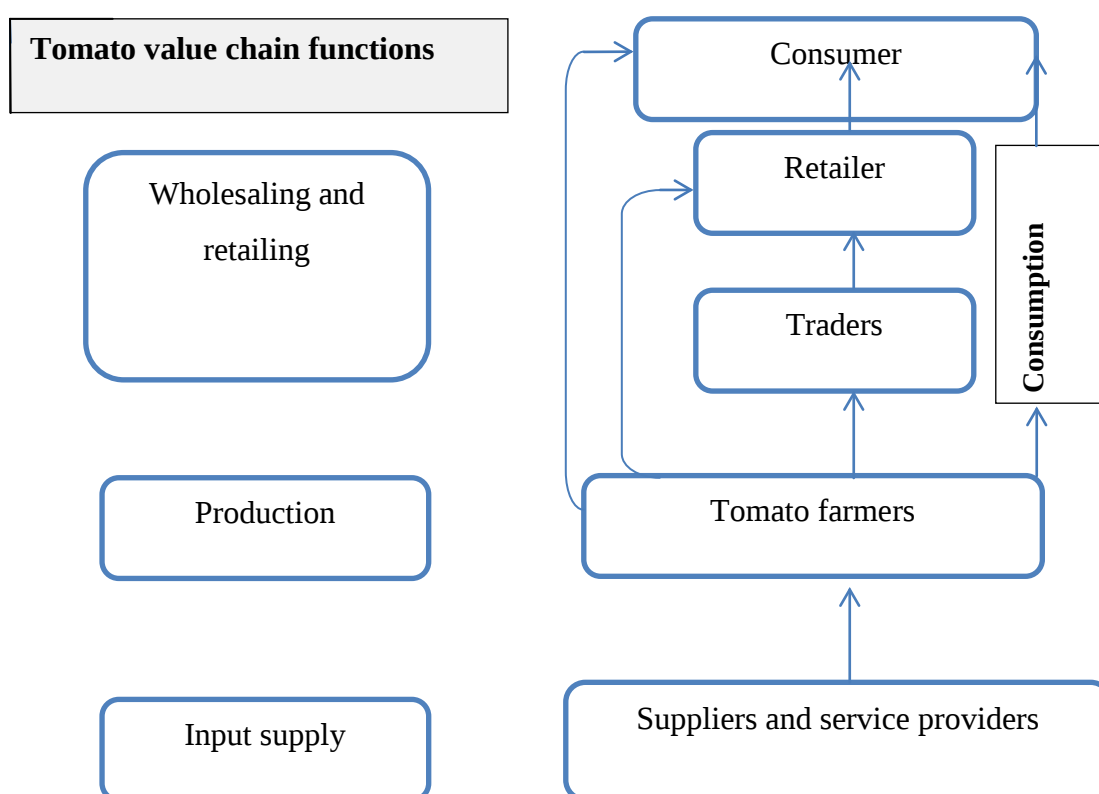


Figure 2.1: Tomato value chain map in Tanzania.

Source: Researcher's own construct (2019).

2.8 Tomato market

Tomato is also known as *solanum lycopersicum L*, can be eaten raw or as an additive to other food so as to increase taste and sauce (Nyamba et al., 2016). Tomato can also be processed into other products like tomato sauce, ketchup, chutney and used in canned beans. Its nutritional value makes it an important ingredient in most of cooked food worldwide (Mutayoba and Ngaruko, 2018).

Tomato global market report of 2019 shows there is an increase tomato market value from 2007 to 2018 amount also to increase in revenue as well. Moreover, the total production of tomatoes increased in the year 2018 by 3.5% against previous years. According to the report, the increase is caused by increase in tomato yields, which means tomato farming has increased worldwide with major consumption from China and India.

The Mordor intelligence report on Tomato seeds 2017-2024, reports that increase in purchase of tomato seed has contributed to the increase trend of tomato production and consumption which in turn resulted in market growth. Cultivation has also increase from 137 million metric ton in 2007 to 182 million metric ton in 2017. In Sub Saharan Africa, tomato is viewed as a cash crop and the mostly consumed food after potatoes.

Tomato marketing channels come in different scenarios according to the nature of business decided by the small holder farmer and what is convenient to the farmer. one channel is the direct channel of market form the producer to the final consumer, in this channel the farmer has already established a good connection with the customer and calls directly to the customer (Elsheikh, 2018).

In Tanzania the market is shaped by supply of fresh produce to urban markets which contributes to 80% of the tomato market in Tanzania, fresh market 10%, export 5 and consumption the remaining 4% (Nyamba et al., 2016). Dar es Salaam market is the major controller of tomato market, with traders and wholesaler governing the process and even controlling the price of tomato in the market. These wholesalers, have a

large knowledge of supply and demand, and take initiatives to arrange transportation of tomatoes to final consumer.

In the market of Tanzania the key qualities area ripeness, skin thickness, color of the tomato and absence of damage and blemishes. Tomatoes with these qualities are very competitive in the market (Adeoye et al., 2016). Tanzania contributes 0.3% of the tomato world market, led by China and India with a yield of 565,000 in 2017; this is according to FAOSTAT data 2017.

There are two major markets of tomatoes in Tanzania, fresh tomatoes and processed tomatoes products with growth of 15% for tomatoes fresh fruits per annum and 17% growth for processed products as an initiative to encourage exporting and use of local products than exports (Bank, 2018).

To support the growth of tomato value Chain in Tanzania, the government has initiated a project under Southern Agricultural Growth Corridor of Tanzania (SAGCOT) by working together with a number of small holder farmers in the selected regions in Iringa and Njombe region, however tomato are grown in other areas of Tanzania including the coastal regions. The project seeks to improve the whole value chain of tomatoes and learn from the impacts of the project to improve in other areas too. Tomatoes in Tanzania are largely grown in Iringa, Mbeya, Kilimanjaro, Mwanza, Tanga Arusha and Morogoro regions.

2.8.1 Importance of Tomato crop

Tomato is considered one of the best vegetable crop rich in vitamin B and C. It has amino acids, minerals, sugar and fibers that bring about good health upon consumption (Adeoye et al., 2017). It also has iron and phosphorous which is known to cure some of the diseases for example skin diseases.

Tomatoes have high economic value around the globe and can be processed, canned or dried for various economic activities. Tomatoes have acquired a great deal of market around the global since it is fruit that is globally consumed by any culture despite the differences in types.

Tomato is widely grown by small holder farmers and it has been proven to be a good source of income to households and it is acceptable in trade businesses in the informal sector (Adeoye et al., 2016) .

2.8.2 Tomato production in Tanzania

In the year 2017/18 NBS report shows that tomato was planted by approximately 184,000 operators in Tanzania in which 88% was contributed by operators from Tanzania mainland. Tanzania had planted area of 50,640 ha in the same year and contribution mainly from Morogoro region followed by Iringa, Kilimanjaro and Singida having the lowest planted area in Tanzania mainland.

The total harvested area in Tanzania is approximately 45,000 ha and Morogoro leading the production of tomatoes by 65% of the total production in Tanzania. Figure 2.2, shows a steady trend of tomato production although the trend is expected to increase due to various developments made in industrialization and agriculture being its major input (Mgaya, 2016). Forty six (46%) Percent of national production is from the SAGCOT region of Tanzania (Bank, 2018).

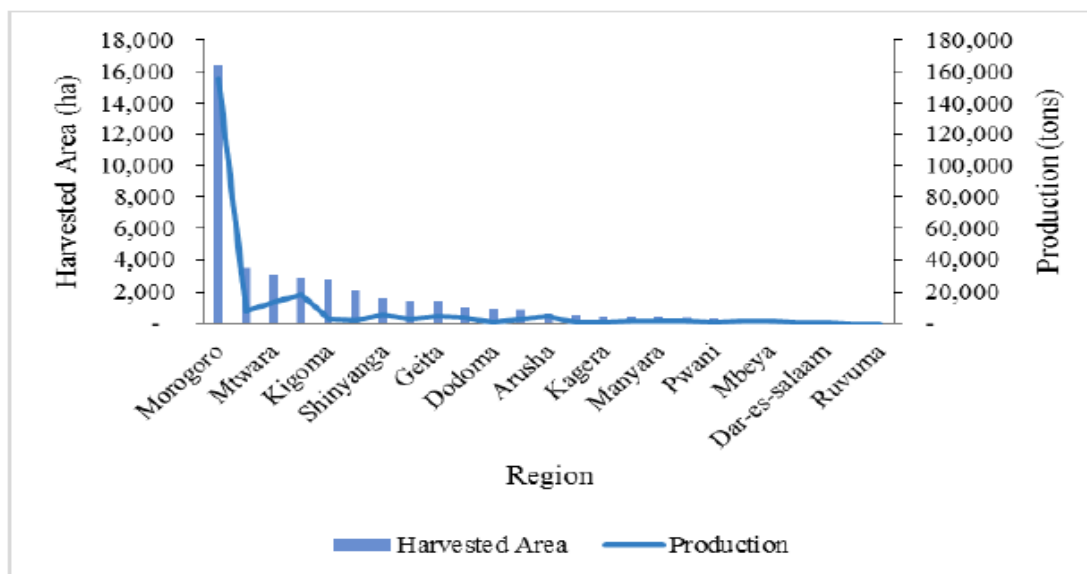


Figure 2.2: Harvested area of Tomatoes versus production in Tanzania year 2016/17

Source: NBS survey report 2017.

During the tomato season, production is very high causing the price of tomatoes to decrease since there are many farmers who have harvested in that season. Moreover, markets are overloaded with tomatoes and farmers experience post-harvest losses at large quantity (Arah et al., 2015).

2.8.3 Tomato market channels in Tanzania

Small holder tomato farmers in Tanzania are highly scattered and the nature of roads to the urban markets causes small holder farmers to depend on middle men who buy tomatoes either directly from the farm or at a local market which is considered the market center (Mwagike & Mdoe, 2015). Also, due to high transactional cost associate with small holder farming, farmers tend to use resource provided by middle men for transport as the middle men switches to a buyers and arranges to sell the produce to a higher market center in Dar es Salaam.

The small holder farmer is not connected to the end consumer but the middle men has whole the knowledge needed about the market information.

2.8.4 Fresh tomato Processing

There are various technologies used to process tomatoes and these depend on the level of investment used by the producers (Martínez-Hernández et al., 2016). Tomato processing mainly leads to different kinds of products depending on the market, in Tanzania tomato products are Tomato sauce, ketchup and tomato paste which is used in cooking instead of the fresh tomato fruit (Mutayoba & Ngaruko, 2018).

Success of tomato productivity and processing by small holder farmers is highly influenced by their age, farming experience, farm size, and labor availability and education level. Moreover, extension services, access to market and access to credit service has a great significance on tomato productivity (Masunga, 2014).

2.9 Empirical studies

A study conducted in Tanzania by Mutayoba and Ngaruko (2018) assessing tomato farming and marketing among small holder farmers revealed that, market information, transportation cost and inadequate availability of input resources greatly affects the market of tomatoes. Also, the study revealed that, profit made by small holder farmers is different across different market channels. Difference appears due to various factors including revenue costs at each node of market transactions and other marketing challenges. Such changes affect the whole value chain of tomatoes to the very end of the consumer.

A study on problems of marketing vegetables in Ranchi District in India, Shankar (2017) explains that farmers of vegetables face a lot of challenges due to constraints of lack of irrigation system, lack of storage facilities, underdeveloped infrastructure like poor roads, transportation cost. Consequently, this resulted in low productivity and high costs of production. Other scholars have provided evidence of constraints of vegetables marketing to be lack of market information, poor access to extension services and high transactional costs (Matsane & Oyekale, 2014).

Chagomoka & Afari-sefa (2014) carried out a study on value chain analysis of indigenous vegetables from Malawi and Mozambique. The researcher employed multistage cross-sectional primary data of 240 respondents in Mozambique and Malawi. This study used participatory evaluation and market research of a wide range of indigenous vegetable value chain to identify potential market outlet and target crops. The findings indicated that an indigenous vegetables sale contributes about 30% and 35% of the small holder's income in Malawi and Mozambique.

Blandon et al., (2010) conducted a study to explore marketing preference of small-scale producers of vegetables from Honduras. The findings revealed that farmers have strong marketing preferences associated with supply chain, comprises prearranging price and quantities with buyers but have remained preferences for some attributes of traditional spot markets such as lack of delivery schedules, lack of grading produce, receiving cash payment, ability to sell at the farm gate and ability to sell individually.

Dessie et al., (2019) analyzed the market of red pepper which is the second most used vegetable after tomato. The findings revealed that, access to extension services, experience, off-farm income and market price influenced the market of red pepper. Also, the study showed that, wholesalers were the main receivers of products from farmers.

Melese (2015) carried out a study on constraints and opportunities of horticultural production and marketing in eastern Ethiopia. The findings indicated that poor pricing system, inadequate local markets, lack of local markets to absorb supply, poor handling and packaging of vegetables produce, excess intermediaries, poor marketing institution and coordination of farmers. But also, the yield is high due to good climate conditions.

Access to market information is considered to be very important factor to vegetable marketing efficiency (Hélène, Norontsoa, & Helgina, 2016). In the study improving access to market information, a driver strategy for marketing in small producers, the study indicated that access to market information is differentiated by the producer's

type and degree of remoteness. Moreover, access to market information increases the willingness of smallholder farmers to participate in vegetable marketing. This is also supported by other scholars who stipulated market information as one of the factors that affect vegetable marketing (Magesa et al., 2014).

Tomato value chain, comprises a complex web of actors all acting at different levels of the market with the main actors being farmers, businessmen, transporters and consumers (Nyamba et al., 2016). Extension services provided by agricultural officers, for example giving advice on various aspects of tomato farming use different means to provide such advice, for example use of radio stations increased access to market information, which provided increase in vegetable marketing activities.

A study on factors affecting vegetable marketing by Oyekale, 2014 indicates that lack of market information and high transactional cost among others are constraints in vegetable marketing, this implies the importance of these factors in the success of vegetable marketing. The study also indicated that, access to storage facilities, good media of transport and increased size of vegetable market contributes to the efficiency of vegetable marketing in Mahikeng local Municipalities in South Africa, for the smallholder farmers.

Kapoor and Kumar, 2015 explain that consumer behavior plays a major role in vegetable marketing. The study also indicated that vegetables are consumed in large quantities and purchased more frequently than fruits. This in turn, contributes to the marketing of vegetables to a great amount. The study also explains that, consumer income and level of education contribute to consumer behavior to purchase vegetables.

J. Jagwe et al., 2010 urged that, transaction cost has great impact of vegetable marketing, moreover such cost vary due to various aspects of the smallholder farmers. Location of household of the smallholder farmer affects the participation of smallholder farmer in the vegetable market, since some place have better infrastructure and hence better commercialized. The study also urged that policies to

improve access to market information, investment in infrastructure and collective action by smallholder farmers may increase market participation and thus improves marketing of vegetables.

2.10 Conceptual framework

This section describes the conceptual framework on the factors influencing marketing of vegetables among smallholder's farmers that guided the study. The framework provides the relationship between dependent and independent variables. Dependent variable would be factors influencing vegetable marketing among smallholders farmers while independent variables access to marketing information, marketing infrastructure, transaction cost, access to finance, distance from the market, information regarding to price and agricultural extension services. The framework guided the present study on the factors influencing marketing of vegetables among smallholder's farmers. The idea of this framework has been borrowed from transaction cost theory.

Independent variables

Dependent variable

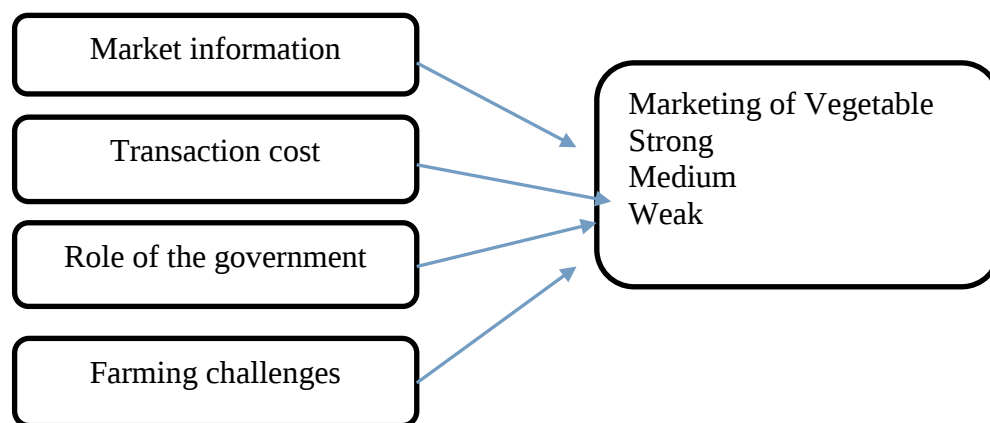


Figure 2.3: Conceptual framework

Source: Researcher's own constructs (2019).

2.11 Research gap

Due to the characteristic of small holder farmers, one being, use of small investment in farming mainly from the household incomes, these farmers face a lot of challenges (Arah et al., 2015). Such challenges include high price of seeds, price uncertainty and transporting goods to the markets place .But also, most of the studies focused on small holder farmers of other cash crops like cashewnuts, fruits, sisal, cassava and even maize (Mwebaze, 2016). Such studies also look into technologies of small holder farming, competitiveness in the market, input supplies for example seed suppliers and sustainability of small holder farmers in various crops.

In additional, much attention has being given to large scale farmers since they contribute to a larger quantity to the exports of the crops and dominate the farming industry (Samshunnahar & Serajul , 2016). This research covers that gap and explores the challenges faced by small holder farmers of tomatoes and understanding of what market information influences the market of tomatoes mainly at kibaha Ruvu chini. In addition, few researches on tomato value chain have being conducted in the SAGCOT region that is Iringa, Njombe and Mbeya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology employed in the study on the factors influencing vegetable marketing among smallholder's farmers for tomato value chain in Ruvu Kibaha District. It comprises the research design and approach, geographical area of the study, target population; sample size, sampling techniques, data collection methods, data analysis, data quality control, reliability, validity and ethical issues used the study.

3.2 Research design and approach

Both qualitative and quantitative approaches are used in this study. The study also adopted descriptive research design. A descriptive study is undertaken in order to be able to describe characteristics of variables of interest in the study (Jilcha Sileyew, 2020). Descriptive design was used because it provides data presentations in visual aids such as graphs, tables and charts and helps the reader in understanding the data distribution (Boru, 2018).

The quantitative assisted the researcher to collect accurate data so as to understand the quantity of responses (Kothari, 2004). Moreover, qualitative technique was adopted to help the researcher to understand farmers' perception regarding the influence of transaction and access to market information to vegetable market, challenges faced by farmers and the role of government in vegetable marketing.

3.3 Area of the study

The research was conducted at Ruvu located at Mlandizi in Kibaha District Council in Pwani Region. The area is famous for small holder farmers in vegetable farming and it is reach in water sources to support vegetable farming. Moreover, the researcher decided to choose River Ruvu in Kibaha District Council due to the fact that it's convenient and accessible to the researcher and also it's easy to collect data. River Ruvu is occupied with a large numbers of small scale farmers who practice

tomato farming and other crop varieties at small scale level. The researcher was able to reach the respondents and managed to collect data easily. In addition, the researcher chose the River Ruvu in Kibaha District Council purposively due to the fact that it represents other district council with the same problem in Tanzania.

3.4 Targeted population

Population can be defined as the groups of individuals, objects or items from which samples are taken for measurement (Etikan, 2016). The population of this study was drawn from smallholder's farmers, agricultural officers and trade officer. The researchers purposively selected small holder farmers around River Ruvu in Kibaha District Council because the area is characterized by the number of small holder farmers who provided sufficient data in regard to the factors influencing marketing of vegetables among smallholders farmers.

3.5 Sample size and sampling techniques

3.5.1 Sample size

Sample size refers to the exact number of items selected from a population to constitute a sample (Adam & Kamuzora, 2008). In this study, a total of ninety three (93) respondents was involved whereby 73 were small holder farmers, (10) trade officers and (10) agricultural officers from Kibaha District Council who are responsible for organizing and monitoring farm activities.

Meeting with small holder farmers was arranged by the Village chairman who is also a small holder farmer. The researcher was able to get the intended number of agricultural officers however; the number of intended trade officers was not met due to high movement activities looking for opportunities in the market. However, the researcher was able to acquire the information needed for the study.

3.5.2 Sampling techniques

In this study, ninety three (93) respondents were selected by using convenient and purposive sampling techniques. In this study, convenient sampling was used by the researcher to obtain respondents from the smallholders and trade officers of Kibaha District Council. The researcher used this technique so as to get access to the

intended smallholder farmers and traders in the Kibaha District Council. Neuman 2014 explains that, convenient sampling is used to provide easy of contact to the intended sample of a study.

Purposive sampling techniques is a non-probability sampling techniques used by a researcher whereby decision concern individual to be included in the sample is taken by a researcher, based upon various criteria such as position in the business, experience, knowledge and availability so that the researcher is able to collect accurate data (Kothari, 2004). The researcher employed this method to specifically select agricultural officer of Kibaha District Council because they are important for providing information about marketing of vegetables in Kibaha District Council and the whole value chain of tomatoes in the study area. Such officers were obtained from district level down to ward level.

3.6 Sources of Data

The researcher used multiple methods of data collection. The use of multiple methods has its value since it helps in minimizing the degree of specificity of certain method to particular body of knowledge, triangulation, validity and reliability of findings (Jilcha Sileyew, 2020). The study collected both primary and secondary sources of data which were collected using a combination of methods. Questionnaires, In-depth interview and data from documentary sources were used by the researcher. Primary data was collected using enumerators administered schedules while secondary data was collected using document review, government reports, previous research and journals. Secondary data was used to collect information and references made during interviews.

3.61. Primary Data

The researcher collected primary data through questionnaire to farmers and in-depth interview to the trade officer and farming officers. This method was used due to the nature of respondents' characteristics and availability. These methods were used so as to fit the intended objectives of the study.

The researcher used this kind data so as to understand clearly the value chain of tomatoes and experiences of the key players in the value chain of tomato. Such data allows room to get current data and acquire opinion of farmers, farming officers and trade officers for the purpose of the study.

3.6.2 Secondary Data

The researcher used official documents which were made available during the study from the Kibaha District Council. Such documents include agriculture policy and agriculture Strategic Plan. Moreover, the researcher used documents such as the horticultures strategic plan, so as to fulfill data collection of the study. Information about these documents was provided by the agriculture officers at Kibaha district council.

Secondary data was collected to reference on primary data collected during the field study. The secondary data mainly explains data about the role of government in vegetable marketing, current status of vegetable market especially tomatoes in Tanzania and initiatives made by the government and private sectors to solve challenges faced by the small holder farmers in Tanzania.

3.7 Data collection methods

3.7.2 In depth-Interview

The researcher used in-depth interviews to the agricultural officers and trade officers to collect qualitative data. Questions were semi-structured to allow room for respondents to talk about their life experiences and opinions. The researcher used guiding prompting questions to give guide to respondents to align to the topic of the study.

Interview sessions were conducted at the offices of the agricultural officers, only one officer were the researcher had to conduct interview at the farm area and near the respondents farm supplies shop at Mlandizi. Most of these interviews were flexible in terms of time and availability of the respondents to allow comfort to the respondent. Some interviews took 30 minutes other took one hour depending on the session.

3.7.3 Questionnaire

Questionnaire was used to collect quantitative data. This method of data collection was used for the smallholder farmers and it was conducted at the village chairman's office. Two groups of thirty (36) smallholder farmers were formulated, each at a different time depending on the availability of the farmers. A questionnaire was used by the researcher (see attached appendix) to capture data regarding access to market information and transactional cost faced by small holder farmers of tomato.

3.8 Data processing and analysis

The first and the second objective of this study were to assess the influence of marketing information and transactional cost on vegetable marketing. These objectives were analyzed using Statistical Package for Social Science (SPSS) software. Descriptive analysis included mean and standard deviation, this method was preferred due to its ability to organize data, aid in comparison of findings and easy statistical computation.

Inferential analysis was used also to determine the relationship between the independent variables (marketing information and transactional cost) to dependent variable (vegetable marketing). Ordinal regression was used to analyze the relationship and how the independent variables influence vegetable marketing. All assumptions of ordinal regression were considered during data analysis.

The third and fourth objectives required understanding the role of government in vegetable marketing and challenges faced by small holder farmers of tomato respectively. The researcher analyzed these objectives through qualitative data approach using discourse analysis taking into account all the talks and written data collected during the data collection process. This gave the researcher room to look into the key emerging issues and asked questions during follow-up interview sessions. Afterwards data was coded through qualitative software Nvivo and key trends of information were further analyzed. During this process, the researcher had to follow-up other data through phone calls and reviewing of the recorded notes during data collection process.

3.9 Data Validity and Reliability

3.9.1 Validity

Bashir, Afzal, and Azeem (2015) explain the importance of data validity as it ensures the data collected measures what it is supposed to measure. From the study, the researcher had to review the interview questions after conducting the first interview and discovering the nature of the respondents and their availability for the study. The researcher also added key burning questions which were mostly highlighted by the interviewees but making sure they questions meet the objectives of the study. Upon reviewing the questions, the researcher had to translate the question into Swahili language so as to make the respondents comfortable during data collection.

3.9.2 Reliability

The extent to which results can be reproduced when the research is repeated is termed as reliability (Bashir et al., 2015). In order to make the study reliable, the researcher was consistent in asking the same questions during the interviews. Moreover, since farmer had a lot to share on their experience regarding vegetable farming, the researcher had to stick to one vegetable that is tomatoes. Farmers in the study were involved in more than one type of vegetable farming, e.g. tomatoes with ladies fingers, spinach and onions but for the sake of the study, the researcher asked and recorded answers specific to tomatoes.

3.10 Ethical Considerations

In order to ensure ethical conduct of the study, the questions which were used in this study were carefully structured to avoid making respondents embarrassed or annoyed. The respondents were assured that the information collected is going to be treated confidentially and that their responses will be used for academic purposes only.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.1 Introduction

This chapter presents results of the descriptive, inferential and exploratory analysis of the study. Data analysis mainly from the following objectives:-

- i. To access the influence of market information to the marketing of vegetables.
- ii. To determine the influence of transactional cost on the marketing of tomato market among small holder farmers
- iii. To determine the role of government support to the market of tomato among small holder farmers
- iv. To explore the challenges faced by small holder farmers in the market of tomato.

4.2 Demographic characteristics of respondents.

Table 4.1 Demographic characteristics of respondents

		Frequency	Percent
Age	20-40	42	45.0
	41-61	37	40.0
	62-82	14	15.0
	Total	93	100.0
Sex	Male	88	95.0
	Female	5	5.0
	Total	93	100.0
Marital status	married	47	50
	Never married	14	15
	divorced	5	5
	widowed	9	10
	separated	9	10
	Come we stay relationship	9	10
	Total	93	100.0

Source: Field data

From the table 4.1, 88 (95%) of respondents are male and the remaining 5 (5%) are female, therefore the more respondents of the questionnaire during the study are males. Age distribution was mainly respondents with age between 20-40 years of age contributing by 42 (45%) of the respondents, and 37 (40%) of respondents had age between 41 -61 years of age. This findings implies that, respondents were mostly of youth age compared to 14 (15%) of respondents with age from 62 – 82.

Majority of the respondents are married contributing to 47 (50%) of respondents. This finding indicate that small holder farmers in this study are married, 32 (35%) were in relationships, widowed and separated but 14 (15%) of the smallholder farmers are not married.

4.1.2 Objective 1: Influence of market information to the marketing of vegetables

Under this objective, the study intended to understand types of market information which are sought by vegetables farmers and how the information influence marketing of vegetables among small holder farmers. Results are summarized in the tables below.

Table 4.2 Five- scaled likert-scale criterion

No	Mean range	Response options
1.	[1,00, 1.80)	Strongly disagree
2.	[1.80, 2.6)	Disagree
3.	[2.60, 3.40)	Neutral
4.	[3.40, 4.20)	Agree
5.	[4.20, 50)	Strongly agree

Source: (Al-sayaad , 2006) cited by (Mary' & Kefyalew, 2018)

Table 4.3 Summary of independent variables

	Market information	Transactional cost
Mean	4.65	4.5500
Std. Deviation	0.587	0.51042
Minimum	3	4.00
Maximum	5	5.00

Source: field data

Table 4.3 represents the overall attitude of respondents toward the influence of market information on vegetables marketing. Mean values of independent variable market information is 4.65. According to table 4.2 all fall under “agree” and “strongly agree” categories with market information having the highest mean of 4.65. The result showed that, independent variables market information influence

vegetable marketing in the study area. This indicates that access to market information has a positive effect on vegetable marketing and without access to market information, vegetable marketing is affected negatively. Hélène, Norontsoa, and Helgina, 2016 support this finding as these scholars show that access to market information is necessary to smallholder farmers and it contributes to profitable marketing.

Table 4.4 Summary of market information sought by small holder farmers

	Market price information	Market infrastructure	Extension service
Mean	4.65	4.26	4.0538
Std. Deviation	0.583	0.765	0.68152
Minimum	3	3	3.00
Maximum	5	5	5.00

Source: Field data

From table 4.4, results showed that information about market price of tomatoes; market infrastructure and extension services have mean 4.65, 4.2 and 4.0538 respectively. These mean fall under category [4.20, 50) which means “strongly agree” according to table 4.1. This implies that, small holder farmers sought market information related to price of tomatoes in the market, infrastructure and extension services available and viewed these information as important information to positively impact vegetable marketing.

4.1.2.1 Inferential analyses

Ordinal regression is the inferential analysis which was used in this study to analyze the relationship between the dependent variable “vegetable marketing” and independent variables “market information” and “transactional cost”. Ordinal regression analysis is used when two or more independent variables are hypothesized influence one or more dependent variable (Yatskiv & Kolmakova, 2011). Ordinal regression is used when the categories of dependent variable ranked , in this case

dependent variable vegetable marketing, was categorized as “ 1=Weak, 2=Moderate and 3= Strong”.

The researcher also considered all the ordinal regression assumptions as follows:

i. Assumption test 1:Case processing summary

Table 4.5 Case processing summary

Case Processing Summary			
		N=number of respondents	Marginal Percentage
Vegetable marketing	Weak	5	5.4%
	moderate	43	46.2%
	Strong	45	48.4%
Valid		93	100.0%
Missing		0	
Total		93	

Source: Field data (2019)

Table 4.5 showed the proportion of cases falling at each level of dependent variable. That is at weak category 5.4% of cases fall at this level, 48% fall at strong level of category. This finding indicates that the researcher analyzed the variables intended for the study and all 93 respondents are included in the study, there are no missing values. This stage is very important as it provides the validity of the analysis (Yatskiv & Kolmakova, 2011)

ii. Assumption test 2: Model fitting Information

Table 4.6 Model fitting information

Model Fitting Information				
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	66.056			
Final	40.896	25.160	2	0.000
Link function: Logit.				

Source: Field data (2019)

Table 4.6 shows intercept model (model without independent variables) compared against final model (model with independent variable) to determine whether it has significantly improve ability to predict outcome. The significant chi-square statistic ($p < 0.001$) indicates that the final model gives a significant improvement over the intercept – only model. The finding interpretes that the model gives better predictions than guessing for the outcome using marginal probabilities.

iii. Assumption test 3: Goodness-of-fit

Table 4.7 Goodness-of-fit

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	30.498	6	0.000
Deviance	30.075	6	0.000
Link function: Logit.			

Source: field data

Table 4.7, contains the Pearson' chi-square and another chi-square statistics based on deviance. This statistic is intended to test whether the observed data are consistent with the fitted model and model with dependent variables fits the model or not. Findings indicates that ($P < 0.001$) which means it is not significant and the model is rejected, data does not fit the model well. However, this does not affect the analysis as model fitting changes with larger sample sizes, scholars advice use of other models (Yatskiv & Kolmakova, 2011).

iv. Assumption test 4: Pseudo R-square

Table 4.8 Pseudo T-square

Pseudo R-Square	
Cox and Snell	0.237
Nagelkerke	0.288
McFadden	0.156
Link function: Logit.	

Source: Field data

Table 4.8 the pseudo R^2 value (Nagelkerke = 2.8%) indicates that, independent variables: market information explains a relatively small proposition of the influence to the vegetable marketing, is likely to be a poor predictor of the outcome vegetable marketing. This is so because; there are other numerous issues that impact the vegetable marketing. For example, supply and demand circumstances, marketing preferences, climatic changes and the number of participating small holder farmers in the market (Blandon et al., 2010; Mutayoba & Ngaruko, 2018).

v. Assumption test 5: Parameter estimate

Table 4.9 Parameter Estimates

Parameter Estimates								
		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[vegetable marketing = 1]	-2.281	3.351	0.464	1	0.496	-8.848	4.286
	[vegetable marketing = 2]	1.351	3.430	0.155	1	0.694	-5.372	8.074
Location	Transactional cost	-1.194	0.464	6.610	1	0.010	-2.104	-.284
	Market info	1.413	0.481	8.615	1	0.003	.469	2.356
Link function: Logit.								

Source: Field data (2019)

From the table 4.9, results shows the regression coefficient and significance test for the independent variables market information. Marketing information is a significant positive predictor of vegetable marketing. The estimates of independent variable market information is (1.413) which indicates that, for every one increase of access to market information, there is a predicted increase of 1.413 in the log odds of falling at a higher level in the dependent variable. This means, for increase in market information to small holder, there is a positive increase of vegetable marketing in the tomato value chain.

vi. Assumption test 6: Assumption of proportional odds

Table 4.10 Test of parallel lines

Test of Parallel Lines ^a				
Model	-2 Log Likelihood	Chi-Square	Df	Sig.
Null Hypothesis	40.896			
General	10.821	30.075	2	0.000
The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.				
a. Link function: Logit.				

Source: field data

From the table 4.10 , results showed that, the significance ($p < 0.001$) which means the assumption of proportional odds that, independent variables(marketing information) is the same across all possible comparisons involving the dependent variable is not satisfied. Thus the study rejects the assumption of proportional odds.

4.1.3 Objective 2: Transactional cost influence on vegetable marketing

This objective, intended to understand the influence of transactional cost on marketing of vegetables. Moreover, the objective explains the perception of smallholder farmers towards transactional cost and success of vegetable marketing.

Findings from descriptive analysis table 4.3 showed that the mean value for transactional cost is 4.5 which fall under “strongly agree” according to table 4.2.This means that, small holder farmers strongly agreed that transactional cost influences vegetable marketing in the study area.

4.1.3.1 Inferential analysis to determine the relationship of transaction cost to vegetable marketing.

Inferential analysis of this objective uses the same tables that are table 4.6 to table 4.10 and results are explained below:-

- (i) **Model fitting information:** Table 4.6 contains the -2log likelihood for an intercept only (or null) model and the final model. The significant chi-square statistic on table 4.6 ($p < 0.001$) indicates that there is significant fit of the final model over the intercept model. Independent variable transaction cost improves the model meaning it is a better predictor of the model. This finding interprets that changes in transaction cost affect vegetable marketing in the study area.
- (ii) **Goodness -of-fit:** Table 4.7 shows Pearson chi-square [$X^2(6) = 30.498$, $p < 0.001$] and Deviance [$X^2(6) = 30.075$, $p < 0.001$] indicates no good model-fit thus rejecting the null hypothesis. This means that, transactional cost has a significant influence on vegetable marketing.
- (iii) **Pseudo R-square:** Table 4.8 summarizes the proportional of variances in the dependent variable (vegetable marketing) associated with the independent variable(transactional cost).The relative small number of Pseudo R-square suggest that transactional cost alone cannot influence vegetable marketing (Yatskiv & Kolmakova, 2011). There are other factors like size of market, market infrastructure that influences the vegetable market (Agete, 2014).
- (iv) **Test of Parallel line:** ordinal regression assumes that the relationship between the independent variables is the same involving the dependent variable, this assumption is known as proportional odds (Osborne, 2017). Results on table 4.10 shows that $p < 0.001$, which means statistical significant and that the assumption does not satisfy in this study.
- (v) **Parameter Estimates:** Table 4.9 showed that transactional cost is not significant influence of dependent variable. Findings revealed that, for every increase of one unit of transactional cost, there is a decrease of

1.194 of vegetable marketing in the study area. More generally, study indicates that, as transactional cost increases there is a decreased probability of vegetable marketing falling under higher level(“strong”) on the dependent variable (vegetable marketing). Increase in transactional cost negatively influences vegetable marketing in the study area.

4.1.4 Objective 3: Role of government in market of vegetables

Under this objective the researcher sought to understand the role of government in supporting vegetable farmers especially tomato small holder farmers. The researcher also wanted to understand the awareness of farmers on these roles and their views. Discussed below are roles of government as discovered from the study:-

(i) Policy formulation

The government plays variety of roles with its different partners in the agricultural sector; this was learnt through interview with agricultural officers in kibaha. The government has a formal structure from the regional level to the council level that deals with agriculture and even down to the ward level.

The government has a role of developing guidelines and policies in agriculture; the government has developed guidelines for each crop so as to educate farmers on best practices for their farming. Such guidelines are written in a language which is easily understood by farmers and it is summarized in flyers. The guidelines are written in Swahili language. Good example is a guideline on how to treat a dangerous tomato disease known as “kanitangaze” (tuta absoluta). It is written in Swahili and it provides all necessary measures to prevent such disease from affecting tomatoes.

Looking into the agriculture policy of 2013 as secondary data review, under agricultural marketing, the government seeks to improve the flow of agricultural marketing information, including information market infrastructure and find better

ways to help farmers. The policy was developed for all activities involved in farming. Moreover, from secondary data review, the researcher discovered that, the government has a policy statement on agricultural information service which will be improved and made available to all agricultural stakeholders. Although this is not specific for vegetables but same policy is effective to vegetable farming too.

Despite developing various guideline and policies, respondents urged that, main role of the government should be to protect farmers especially small scale farmer. Protection should come in different ways, first by making sure vegetable farmer have a chance to sell their crops at a competitive price which will also enable farmers to gain profit and see the value in agriculture. Moreover, interviewed farmers also responded that, the government should also find good market for vegetables, even outside the country. Since now the most consuming market is the domestic market in Tanzania. Farmers urged that, even if the government is going to support them financially if there is no good market, small scale farmers will still suffer.

The government is also focusing on providing enabling the business environment of agriculture in general, to capacitate farmers with ways to do commercial farming profitably. Also through agricultural development strategy, the government is aiming at increasing government marketing efficiency and also creating favorable environment for commercial activities, including improving market infrastructures and access to information.

One of the interviewed officer explained that the government is now focusing on building storage facilities and package for vegetable crops, because such crops are easily destroyed. Once storage facilities are established it is easy to increase production of vegetables especially tomatoes.

These findings show that, there are initiatives from the government since there is a movement towards industrialization and agriculture is a major input, however, most of these initiatives favor large scale farmers and small effect to the small holder farmers especially of tomatoes as it is involved in an informal market system unlike

other crops. This was urged by the respondents who believed that the government is supposed to do more in the vegetable farming and establish a formal system to protect small holder farmers of tomatoes.

(ii) Financial support

From the study, the researcher discovered that, the government enables small scale farmers have access to financial support. This is done in groups, by grouping small scale farmers into a group of 15 people, they get various advantages and it is easy to give them loan once in a group than individual. The government through cooperation officers at different levels provides training and awareness on importance of farmers to work in groups. Moreover such cooperation, farmers are able to spot unique opportunities that will improve their farming activities, including access to farming tools, manure and updated technologies of farming. As it was explained by one of the cooperative officer at district offices that, *“I am employed by cooperation of the government, and I am seconded at this office mainly to support economic activities including farming, and especially small holder farmers”*

Small scale farmers have to be in a registered group for them to access benefits, they are also supposed to have a record of their financials and expenditures for them to access loans from various agricultural financial institutions. Since the groups are required to prove ability to self-regulate themselves and account for the financial support, many farmers are reluctant to join such groups. They claim that it is hard work; farmers are only interested with the money and no other activities. That is why, there is only one stable group in Kibaha which has 70 members and are now progressing well. Other groups die in the initial stage of formation. Looking into other countries, for example Kenya, cooperative groups have proven to be a success for farmers, and most of farmers work in such cooperative groups.

Another role which the researcher discovered from the study is the role of research, which is done by National Agriculture Research System (NARS). But also, there are

research institutes of agriculture at each zone in Tanzania as explained by agriculture officers from Kibaha District Council. Such institutes work to improve seeds and find solution to diseases in vegetables and prevent such disease from further spreading. The government under parliamentary Act No 10 of 2016 aims at strengthening agricultural research, and through the same law Tanzania Agricultural Research Institute was formed.

(iii) Establishing long term projects plans and interventions.

The study revealed that, the government has long term projects and interventions which are implemented country wide and smallholder farmers from the study area are among the benefactors. From the interviews with government officials the researcher found out that, Agricultural Sector Development Plan Phase (ASDP) is a major project at Kibaha District Council and it was launched in 2006 by the government of Tanzania with the aim of improving agricultural sector and facilitating the sector's strategic plan. This program had a major objective of amongst other including, helping farmers get access to improved knowledge, technologies and even have access to marketing systems and infrastructure, later on increase productivity, profitability and farmers' income. After implementation of ASDP I, the government then launched ASDP II which will be implemented in the year 2017-2025.

One of the lesson learned from ASDP I during the study as explained by interviewees was to:

“Focus on the use of resources on high impact interventions which included improving value chain, strengthening farmers’ organization by facilitating their participation in marketing and access to improved market infrastructure. With this in mind, ASDP II focuses on increasing productivity and incomes of small holders farmers for priority commodity chain by improving the market infrastructure, agri-business and farmers linkage, laws and regulations that protect the small holder farmers and providing access to affordable technologies and farm machineries. The

ASDP II framework converges to improving small holder farmers' commercialization".

Through this program, other intervention that complements the program has being established. For example, one of the interviewees said that, *"the government in partnership with the European Union in 2018 has launched a project called AGRI-CONNECT to promote productivity and competitiveness in the agricultural sector. The agreement dedicated approximately TZS 265 billion in improving value chain in the areas of horticulture, Tea and coffee"*.

Moreover, interviews on the role of government revealed that, the ASDP II focuses mainly on small holder farmers and implementing measures that improves their market orientation and help them grow from semi-subsistence farming status to practicing farming as a business. it also includes establish and strengthening a formal market system for crops including garden farming. This would be a relief for small holder farmers as their market is a free market hindering them from selling the vegetables at a price that would give them good profit and not just breakeven situation in their farming business. But farmers are not aware of these initiatives in such they see that vegetable farming is left behind.

(iv) To protect farmers' right

Findings from the study revealed that, government has a major role of protecting vegetable farmers' rights. Respondents urged that, the government has to establish laws and regulation that protect vegetable farmers especially tomatoes, but more importantly look into small holder farmers and improve their market environment. One of the respondents was quoted saying, *"The market of vegetables is a free market, anyone can decide on the price, but there should be a guiding price in the market place every day to protect farmers"*

Farmers were keen to explain this role, as it affected them directly, the consideration of government enacting laws to protect vegetable farmers' rights would encourage more vegetable farmers to involve in vegetable farming.

4.1.5 Objective 4: Challenges faced by farmers in accessing market for vegetables

Under this objective, the researcher intended to understand the current challenges of tomato small holder farmers. The researcher mainly looked at their day to day farming activities throughout the value chain.

(i) Difficulty in accessing information

From the study, the researcher found out that there are a number of challenges in which small holder farmers of vegetables face. One key challenge is difficulty in accessing information, especially information about the price of tomatoes in the market. Farmers urged that, most of their time is spent at the farm where they do not get time to listen to the radio. Farm activities begin at 5 am in the morning and end up late evening. This has made them not to access information on time. For example, information about price of tomatoes these farmers explained that, they rely on what they will find at the market place. The price which the trader will announce is the selling price.

Lack of access to information about price has contributed to having a middle man or also called a trader who manipulates the markets. This trader dominates during negotiation between the farmer and the trader about the selling price. A 20KG bucket of tomatoes is sold to the trader for TSH5000, this is price at the market and later on trader sells it for price of TSH 10,000 to 15,000 depending on the supply and demand of the market. With this observation, it is obvious that the middle man benefits more without incurring any costs of farming. Farmers explained that during the market, after negotiation the farmer has to come another day to collect his/her money from the trader. Farmers also explained that, each turn of harvesting tomatoes, they have to sell to the trader and wait for a long time to receive payment and sometimes do not get paid enough to compensate the expenditure and end up getting a loss.

This challenge is also supported by other scholars who believe the major challenge of tomato small holder farmers is lack of access to information which hinders small

holder from making prompt decisions as it increases transactional cost and reduces market efficiencies (Tembachako et al., 2015). As a result, small holder farmers sell their produce in markets that are less competitive and not transparent enough, mostly the village market or urban market which is Dar es salaam.

(ii) High transactional cost

Another challenge noted during the study is high transactional cost for tomato small holder farmers. This includes costs from planning and preparation of the farm, planting, harvesting and even selling to the market. Farmers at Ruvu chini Kibaha also explained that, they encounter various cost that need to be taken care of regardless of whether the farmer will get profit or not. For example, cost of tomato seed ranges from TSH6000 to 300,000 depending on the quantity and quality of the seed. Also cost of renting the farm, labor force, organic and inorganic fertilizers, pesticides, petrol, water pump and medicines are very expensive (Mutayoba, and Ngaruko, 2018). Transport cost to the market place is 2500 by motorbike because the farms are a bit far from the market. Summing up all the necessary cost per acre a farmer needs to have more than TSH 700,000 up to harvesting of tomatoes. Most of these farmers urged that these costs are very high for them considering that they use money from savings of their other businesses and expect to return.

During group discussion, the researcher quoted farmer saying, “ *also pesticides are very expensive, see these 4 pesticides and the cost is Tsh 450,000. We were able to get few of these pesticides, we are waiting for farm officer to help us get the other pesticides. This is very expensive*”

Such high transactional cost hinders small holder farmers' participation in global market channel (Severine et al., 2014). Moreover, farmers tend to farm for the purpose of home consumption due to the high cost involved. From the study, farmers also explained that due to such high cost, they are forced to use the lowest technology of farming to prevent further loss, some reduce the number of times needed to put fertilizers, some do not use pesticides nor do weeding. All this is done so as to reduce transactional cost. As a result, the tomato harvested is of low quality.

Farmers from the study area are involved in fragmented land tenure. Farmers own scattered plots due to limited land availability compared to the number of farmers available. This also increases the transactional cost as farmer needs to travel to different areas to while working in their farms. For example from the study area, the researcher discovered that, a farmer incurs twice as much of the cost by having plots in different areas. Some are far from the sources of water and have difference in land fertility.

(iii) Lack of access to high value reliable market

From the study, farmers urged that, vegetable market is not reliable and very unstable due to price fluctuation and its perishability. More importantly, the market is dominated by wholesalers and large scale farmers. Looking into Ruvu Chini vegetable farmers, engaged in the market of vegetable just to get enough money to sustain life.

Small Farmers from the study all depend on one market place that is Mlandizi, which is also used by farmers from other areas too. This causes unfavorable conditions to small holder farmers since the competition is very high and traders dominate the market. Farmers also explained that trying to access market in other areas is very expensive compared to the investment they have made. Such market includes markets in Dar es Salaam region and Chalinze market. From discussion it was quoted that, *" we only depend on Mlandizi, we do not have other reliable markets, Dar es salaam is very far for us small holders due to cost, we will not get profit in Dar es salaam market"*

Moreover, form the study the researcher discovered that another market used by small scale farmers is "Mnada" which happens on Sunday. Such market is also not very reliable because tomatoes are often not finished in the "Mnada" and farmers do not have proper storage facilities and tomatoes get rotten causing a big loss to these farmers.

(iv) Weak farmer's cooperatives or groups

From the study, the researcher found out that, the farmers' cooperatives are not as strong as they should be, since the existing cooperatives do not comply with the guidelines given to them, they only form cooperatives for the interests of getting loans. Moreover, none of the interviewed farmers are members of any farmers cooperative, they only operate alone believing that, this will enable them to yield more profit.

But looking into other scholars, cooperatives are of great advantage to the farmers especially small holder farmers. This is because, they can access markets as a group and be able to set price that will benefit them as a group. Also, such formal groups form a basis of trust even to funding agencies and farmers can access loans of different criteria and forms (Nyamba et al., 2016).

This findings shows that, there is minimum awareness to the small holder farmers regarding the importance of joining cooperatives. This is why farmers are reluctant to join such cooperatives or farming groups. Responses from the agricultural officers from the districts have proven that cooperatives are of great advantages and farmers have not understood it well to be able to make a decision of joining one.

(v) Price risk and uncertainty

The vegetable market in Tanzania is characterized by a free market where everyone can engage in vegetable farming and dictate on the price of tomatoes. There is no a formal guideline whereby farmers use to determine price of tomatoes, but price is determined by supply and demand intensity in that particular time. Price fluctuation of tomatoes is a major challenge which discourages the farmers because most of the time the middle man and whole sellers dominate the market. Small holder farmer cannot decide the price of which he /she would like to sell. This was explained by one farmer during discussion that,

“Vegetable market is a free market, this does not support farmers as traders decide the price most of the time and if we disagree we are left with our tomatoes to rot, so we just agree with the price decided by the trader”

There are no clear means to channel information about price of tomatoes, most farmers responded that the price found at the market place, is the price of tomatoes in that season. Farmers cannot bargain for a much profitable price and hence end up selling at a price decided by the trader.

(vi) Inadequate local market

From the study, the researcher discovered that, there is only one local market depended by small holder farmers of tomatoes and other crops. The market has various actors of business until it reaches to the final consumer. Moreover, farmers from the study area all plant and harvest tomatoes at the same time, this has caused market saturation whereby tomatoes harvested are a lot and all have to be sold at the same market. As it was explained during interview that,

“At this area, we have one market only, Mlandizi market, selling to other market is cost full as they are far, the nearest is Dar es salaam but this is costing”

This challenge has forced farmers to concentrate only on farming, and not how to reach out to find markets and even final consumers. The one doing such business is the trader who is also known as the wholesaler. And he or she dominates most of information at the market and even assume leadership roles to make them have access to more crucial information (Tembachako et al., 2015).

(vii) Lack of bargaining power

From the study, the researcher also found out that, small holder farmers of tomatoes have little bargaining power and this is a challenge to them. The farmers from the study explained that, the middle man/trader dominates the market, and farmers do not have bargaining power. This challenge affects the participation of farmers in the

market of tomatoes and forces farmers to engage themselves in other crops as well in order to get into a better situation where the farmer can gain enough profit (Matsane & Oyekale, 2014). As it was explained by one of the farmers that,

“I remember one time, I harvested and took my tomatoes to the market, and bargained with the trader, but as I was checking the rest of the market, when I came back for my money, I found my tomatoes finished and I was not given money, when I asked the trader showed me other tomatoes which are not mine and told me that he was also not paid already, this made me very disappointed as I could not do anything about it”

(viii) Excess of intermediaries

There are no barriers to entry due to lack of regulations to traders of tomatoes to follow in case they want to purchase directly from the farmers, it is a free market. This has contributed to existence of unknown large number of traders at the study area; the situation is also the same throughout Tanzania. With such situation were traders, intermediaries are not monitored, farmer have lost their power to dominate the market, instead traders dominate the market and offer very low purchasing price of tomatoes. Such traders after purchasing, sell the same product at a very high price compared to the one purchased directly from the farmer.

This has caused more farmers to lose their hope in the farming business and invest more in other businesses than farming. For example, from the study area, vegetable farmers use a land of not more than 7 acres and after harvesting, they prefer to sell the tomatoes directly from the farm which involves a cash business. Deciding to sell to a trader at the market becomes much cost full as farmers do not get paid on time by the traders.

(ix) Climate conditions

One of the biggest challenge discovered from the study is the unfavorable climate conditions. The small holder farmers from the study explained that the temperature is

very humid for Tomatoes to grow well. Tomatoes often get diseases caused by excess humidity and this lowers production of tomatoes.

Moreover, during the study, the researcher witnessed the destruction caused by heavy rain of October season. Small holders of vegetables farming faced massive loss of all their crops, no one was able to meet the November harvesting season as all crops were destroyed in the farms. This was such a tragedy to the small holder farmers; however some were able to acquire land in higher lands and vacate from the valley of Ruvu chini. This was noted in discussion from farmer who explained that, “ *we lost all the crops in our farm, everything destroyed by the heavy rain, as we speak we have created another nursery for tomato flowers, and we are planting it again*”

(x) Lack of storage facilities

From the study, lack of storage was explained to be a major challenge for tomato vegetable farmers. This is because, tomato is a perishable crop and at minimum it is expected to stay fresh from 3- 7 days depending on the weather and quality of seed. Due to lack of storage facilities, farmers are unable to engage themselves in higher productions; they mostly cultivate in small lands and immediately sell it at a lower price to avoid getting loss. This also influences the market of tomatoes since farmers participation in the market is discouraged due to unfavorable conditions for the vegetable farmers.

Moreover, the interviewees explained that, farmers mostly use buckets for storage during transportation from one point to another and sometimes spread the tomatoes on the floor to avoid excessive heat which will destroy tomatoes. This challenge occurs during harvesting and before consumption also known as post-harvest losses (Arah et al., 2015). One of the agriculture officers was quoted saying, “*the main challenge is lack of storage facilities, as tomatoes are highly perishable crops*”

CHAPTER FIVE

DISCUSSION OF THE FINDINGS

5.1 Overview

This chapter provides discussion of the findings based on the objectives of the study and findings presented in chapter 4. Each objective is explained below as follows:

5.2 Objective 1: Influence of market information to the marketing of vegetables

Results showed that market information has influence on marketing of vegetables. Study revealed that, such information is very important to small holder farmers in such it contributes to their decision to participate in the market. The most sought information is price information followed by infrastructure and extension services. Price information is the most important information for any farmer, as it determines the profit which will be gained by farmers. Having a good price is crucial in any market as for small holders farmers rely on it for their sustainability.

Conclusively, market information has influence on marketing of vegetables, and availability of such information influences the market positively. Lack of market information is one of the challenges urged by small holder farmers and market information should be easily accessed to all small holder farmers to enable them to participate effectively in the vegetable market.

5.3 Objective 2: Transactional cost influence on vegetable marketing

From the study, transactional cost was found to influence vegetable marketing and this was also supported by small holder farmers during the study. Small holder farmers explained, such costs affect their investment in farming, and the more the cost is high, small holder farmers hesitate to do farming in the future. From the findings, transactional cost influences the vegetable market negatively. In such, increase in transactional cost causes decrease in vegetable marketing as small holder farmers will not take part in farming.

5.4 Objective 3: Role of government in market of vegetables

From the findings, role of government is to establish policies and enabling environment. This is true since, study revealed various policies and initiatives done by the government to promote vegetable marketing. Existence of national projects, financial services are among the initiatives done by the government.

However, small holder farmers from the study urged that these initiatives suit large farmers than small holder farmers. Also, role of government should be to protect the rights of small holder farmers as a specific measure. Government should have a reform specific for small holder farmers and enable them to take part in commercial farming.

5.5 Objective 4: Challenges faced by farmers in accessing market for vegetables

From the study, major challenges explained are difficulty in accessing market information, transactional cost and uncertainty in price of tomatoes in the market. But most of all, findings revealed that, there is existence of middle men or trading officers who manipulate the price and market information of vegetables. This is also a major challenge to small holder farming in such; the trader dominates the market and gets most of the profit than small holder farmers. Small holder farmers do not have power to negotiate as whole information is owned by the trade officers. Such situation demotivates small holder farmers in the vegetable marketing.

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CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Overview

This chapter provides a conclusion of the study by summarizing the study's findings, limitations of the study and recommendations. The chapter is structured as follows; (i) summary, (ii) limitation of the study (iii) recommendations (iv) conclusion. All these aspects are based on the findings presented and discussed in chapter four.

6.2 Summary of the findings

Based on the study, small holder farmers depend on the entire system of information flow and access to make their decisions. In such, information about the price of tomato per season is of high value to these small holder farmers. But nevertheless, tomato small holder farmers, farm mainly for consumption and few for both income generation and domestic consumption which forces them to engage in the market just to cutter the expenses of farming and not be competitive.

This mainly is caused by various challenges that small holder farmers from the study face. Such challenges include lack of clear tomato market, very high transactional costs and mostly the free market of vegetables which exists. Having a free market of vegetables means that everyone is free to participate and decide on the price of selling tomatoes. With such a situation in the vegetable market, it is hard to control price fluctuation, middle men and even the entire market system. Tomatoes small holder farmer from the study also showed their concern on the existing guidelines of agriculture. Most of these guidelines provide direction on the general aspects of agriculture without emphasizing on vegetable farming especially tomatoes.

6.3 Limitation of the study

From the study, the researcher faced some limitation including availability of some of the respondents, such as the trade officers due to their busy schedule of searching for opportunities and farmers who were very busy with their activities in the farms as most of them were in nursery stage of tomato farming. However, upon clarity the

researcher met with specific farmers at their farms to obtain further information and get the actual experience of tomato farming.

Moreover, the researcher was not able to visit small holder farmers from other villages due to limitation of the resources; however the participated respondents managed to fulfill the intended data collection for the study.

6.4 Conclusion

From the first objective, influence of market information to vegetable marketing is evidently important. Access to market information provides confidence to smallholder farmers to engage in farming because they have access to price information, market and even other information regarding pests and pesticides which is important for farmers. Thus one cannot separate vegetable marketing with market information.

The second objective, influence of transactional cost on vegetable marketing is observed to be massive. As increase in transactional cost negatively affects vegetable marketing as less smallholder farmers will be willing to take part in farming and hence affects the whole market of vegetable as there are less actors involved. Smallholder farmers as well as any farmer would work to reduce transactional costs so as to increase profit.

The third objective, understanding the role of government in vegetable marketing is a very important aspect. As it is well known, the government's main role is to provide policies and enabling environment for smallholder farmers and large farmers too. But in the context of smallholder farmers, the role of government was stressed to be, providing protection of smallholder farmer's rights, this includes right to regulated price, right to sustainable market and even right to have a platform to voice their needs.

The fourth objective, challenges faced by smallholder farmers included various aspects for example uncertainty to price, lack of market information, unreliable market and even open market condition in the vegetable market. But uncertain price

was urged by smallholder farmers to be the most challenging of the all, as price determines profit gained and even ability to continue with farming in future.

Unless the value of tomatoes farming by small holders is taken into consideration, tomato will remain a less valued crop in the agricultural industry. Tomato has high value in the global agricultural industry and other countries have seen the opportunity to invest more in Tomato farming by providing clear guideline and policies that protect and enhance tomato farming among small holder farmers.

6.5 Recommendation

6.5.1 Recommendation for the government

Characteristics of smallholder farmers for vegetables should also be taken care of when developing a value chain system for the country. In such, the government needs to develop value addition activities on the farming of tomatoes. Such process may help improve the quality and quantity of tomatoes.

Capacity building to smallholder farmers and comprehensive follow up of farmers' progress by farming officers who are available at each administrative level, that is at the regional, district and ward level. Since farming officers at each level are viewed as the closest connection to the small holder farmers and can be used to persuade farmers into using better methods of farming tomatoes.

Eyes on garden farming, not just flower but vegetables, develop regulations that will prevent free market. And have a system that is official on the market of tomatoes and even reducing the burden of small holder farmers. Also, farmers' skills on how to grow into the business farming needs improvement, so as to make farmers more competitive in the market of tomatoes locally and internationally.

Moreover, there should be an improvement in the organization of tomatoes value chain actors so as to create good communication and have an increased voice that will make tomato farmers heard more clearly and get solution to their challenges. Such organization should comprise of tomato farmers within one geographical area so as to speak in one voice on their matters. This will give small holder farmers of tomatoes access to market, access to other extension services of farming, give

farmers good interaction with the government and be able to get access to further opportunities in the agricultural industry.

6.5.2 Recommendation to smallholder farmers

Small holder farmers have to evaluate the importance of cooperatives and see the advantage in them. With cooperatives, small holder farmers of tomatoes are able to join as a group and present their concerns as a group, and even when entering the market as a group they become stronger together and can bargain on their matter well.

Moreover, with such cooperative, small holder farmers will be able to get financial assistance from various financial institutes including getting financial education which can be applied to other businesses as well.

6.6 Area for further studies

This study focused on tomato vegetable marketing, looking into the influence of market information and transactional cost, role of the government and challenges faced by smallholder farmers at the level of farmers, traders and agricultural officers within the value chain. Researcher recommends further studies on other vegetables such as onions, lady fingers, carrots etc. Also other researchers may look into other stages of the value chain of tomatoes including wholesalers, processors and final consumers.

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APPENDICES

Questionnaire

1. What is your age?
2. Gender
 - i. Female
 - ii. Male
3. Marital status.
 - i). Married ii) Never married iii) Divorced iv) Widowed v) Separated vi) Come we stay relationship vii) Don't know.
4. How many plots did you use for crops in 2018/2019?
 - i) 0-3 ii) 4-7 iii) more than 7
5. The plot owned or rented?
 - i) Owned ii) rented iii) other specify.....
6. If rented, how much do you pay per year?.....
7. **Please describe how you used the tomato harvested**

Crop	Amount harvested in Kg	Amount retained for home use in Kg	Amount sold in kg	Average price

B. please describe how you sold and at what price

Who did you sell your crop produce to	How do you compare price over 4 years?
A) Broker B) Trader C) Cooperative D) Market E) Other specify	a) Increasing b) Decreasing c) Remained the same

UNDERSTANDING, AWARENESS AND INFLUENCE OF MARKETING INFORMATION

1. Where did you receive marketing information?
i) Media ii) social media iii) family and friends iv) agricultural groups v) community office vi) cooperative society.
2. Is marketing information important to your farming?
i) Very Important ii) somehow important iii) not important iv) Don't know
3. Which of the following market information influences marketing of vegetables?

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Market Price information					
Size of market					
Market infrastructure					
Agricultural extension services					
Transactional cost					

4. Influence of transactional cost on the marketing of information.
1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree
5. Do you think, vegetable marketing is highly influenced by market information?
1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree

KNOWLEDGE, AWARENES AND ACCESS TO FINANCE TO SUPPORT FARMERS

1. Knowledge about financial service providers

Financial service provider	Are you aware of the following financial provider 1=yes, 0=no	Do you use the following financial provider 1=yes,0=no
VICOBA		
ROSCA-mchezo/upatu		
Mobile money		
SACCOS		
Bank		
Other specify		

2. Have you ever borrowed money for your farming activities?

i) Yes ii) No

3. If yes, what did you use it for?

i) To purchase agricultural inputs

ii) To establish any business

iii) To pay for labor charges

iv) Other specify

4. What is your opinion on the role of the government?

5. What are the challenges you face n vegetable farming?

6. Do you have any suggestion or recommendations?

-----THANK YOU-----

A. Interview schedule for agriculture officers in Kibaha district office

- i. How long have you been working in the tomato farming?
- ii. Are you aware of the challenges faced by small holder farmers? If yes, what do you think can be done to solve these challenges?
- iii. What are your views on the market of tomatoes in your area?
- iv. Does the government support tomato small holder farmers in your area?

A. Interview schedule for traders?

- i. How long have you been doing this business?
- ii. How would you describe the market of tomatoes in your area?
- iii. What challenges do you face in doing this business in your area of work?
- iv. Are you aware of challenges faced by small holder farmers of tomatoes? If yes, what do you think can be done to improve the situation?
- v. In general, what suggestions do you have for the government in supporting tomato farming?