ECONOMIC ANALYSIS OF FRESH FRUIT AND VEGETABLE EXPORT MARKETING CHANNELS BY SMALL-SCALE FARMERS IN TANZANIA: THE CASE OF ARUMERU DISTRICT

BY

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ABSTRACT

The falling prices of traditional cash crops such as coffee and the growth of world markets for non traditional cash crops have led farmers to look for alternatives, hence the growth of exports of fresh fruit and vegetable. This study aimed at investigating the profitability and coordination of fresh fruit and vegetable export marketing channels by small-scale farmers in Tanzania. Specifically, the study had four objectives: (i) To describe Tanzania's fresh fruit and vegetable export marketing channels; (ii) To carry out profitability analysis of the export of fresh fruit and vegetable by small-scale farmers; (iii) To determine factors governing small-scale farmers' choice of an export marketing channel, and (iv) To identify challenges facing marketing agents within the fresh fruit and vegetable export market channels. A cross-sectional survey was conducted to collect primary data. Structured questionnaire was used to collect primary data; Secondary data were obtained from the Arumeru's DALDO office. Descriptive and quantitative analytical techniques i.e. cluster analysis; Gross margin and logistic regression were employed. The findings suggest that four export marketing channels for fresh fruit and vegetable exist, that are vertically integrated. The enterprises profitability between farmers selling fresh fruit and vegetable to export and domestic markets was statistically different ($P \leq 0.05$), meaning that export trade is more profitable than domestic trade, with a mean GM difference of Tsh. 543 642 per acre. Prices offered by buyers, the mode payment and rejection rate of the consignments were found to be the factors governing the choice of a particular export marketing channel. This study found that knowledge about Global good agricultural practices, record keeping, possession of storage facilities and contract farming were the major challenges facing FFV export market enterprises. This necessitates the formation of FFV farmers and traders association and provision of soft credit which may increase FFV export marketing efficiency.

DECLARATION

I, **CHARLES PETER MGENI**, do hereby declare to the Senate of Sokoine University of Agriculture that this dissertation is my own original work and has neither been nor being concurrently submitted for a higher degree award in any other institution.

Charles Peter Mgeni — Date

(MSc. Student)

The declaration is confirmed.

Prof. Andrew E. Temu — Date

(Supervisor)

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DEDICATION

This work is dedicated to all my beloved relatives, for their endurances, understanding and support during my study period. To my Mum Susan for always encouraging me in my quest for knowledge, and to the whole of my relatives and friends, your challenges and expectation on me have always encouraged me to fight on!

MAY THE ALMIGHTY GOD BLESS YOU ALL

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B/C	-	Benefit –Cost ratio
CMC	-	Conventional Marketing Channels
DAEA	-	Department of Agricultural Economics and Agribusiness
DALDO	-	District Agricultural, Livestock Development Officer
DED	-	District Executive Director
DFID	-	Department for International Development(UK)
EA	-	Exporter Agents
FFV	-	Fresh Fruits and Vegetables
GAPs	-	Good Agricultural Practices
GLOBALGAPGlobalGap	-	Global Good Agricultural Practices
GM	-	Gross Margin
GMPs	-	Good Management Practices
GTZ	-	German Technical Aid
HACCPS	-	Hazard Analysis and Critical Control Points
HODECT	-	Horticultural Development Council of Tanzania
IO	-	Industrial Organization
IPM	-	Integrated Pest Management
IRR	-	Internal Rate of Return
ITF	-	Input Trust Fund
MM	-	Marketing Margin
NIE	-	New Institutional Economics
NGOs	-	Non Governmental Organizations
ROI	-	Return of Investment
SMEs	-	Small and Medium Enterprises
SNAL	-	Sokoine National Agricultural Library
TAHA	-	Tanzania Horticultural Association
TFOC	-	Trade Facilitation Office Canada
TR	-	Total Revenues
Tshs	-	Tanzanian shillings
TVC	-	Total variable Costs
URT	-	United Republic of Tanzania

USAID	-	United States Agency for International Development
VIF	-	Variance Inflation Factor
VMS		Vertical Marketing System

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Export of agricultural products, both the traditional and non traditional cash crops, have been contributing significantly to Tanzania's foreign earnings (Temu and Marwa, 2007). The falling prices of traditional cash crops such as coffee, cotton, sisal, tea and cashew nuts, and the growth of world markets for non traditional cash crops, have compelled farmers to diversify and switch towards fresh fruit and vegetable. Dolan and Humphrey (2001) argue that, because of an increasing demand for fresh fruit and vegetable, effort has been devoted to promoting the production of fresh horticultural products in developing countries.

Fresh fruit and vegetable (FFV) have more value to people than is commonly appreciated; exports of these crops enhance workers' pay, skills, their productivity and future prosperity (Wangwe, 1995). Moreover, it is widely accepted in development economics that exports can be a driving engine of an economy (Lall, 1999 and 2001; Wangwe, 1995). Exports influence and contribute to higher growth and economic development (Wangwe, 1995). Exports remain directly relevant as the main means of earning foreign exchange, reaping economies of scale, basis for specialization and accessing new technology (Lall, 2001).

Furthermore, exports are sources of learning and channels for technological transfers to the nation. They also allow domestic producers to learn from sophisticated markets abroad (Wangwe, 1995). In the absence of such spillovers, there is only a weak economic base for government policies that favor exports.

It has also been pointed out by TFOC (2004) that diversification of export markets is vital for the National Trade Policy embracing opportunities offered by the globalized marketplace. Although fresh fruit and vegetable can provide lucrative returns, there are still some barriers to the sub sector's development (Tineke, 2003).

The debate on market access for small holder farmers has centered on the farmers and their marketing environment, the need for coordination, the management of marketing channels, and their efficiency (Suleman, *et al.*, 2007). Coordinated supply chains are spreading rapidly, in both more and less developed countries, but share of small-scale farmers in developing countries is still small (Diof and Jaffee, 2005). The share of fresh fruit and vegetable that goes through supermarkets in the developing countries is less than ten percent and a significant part of that product is still sourced from open wholesale markets (Diof and Jaffee, 2005). This means that for the whole country share of fruit and vegetable that goes through coordinated supply chains is less than one percent (Diof and Jaffee, 2005).

1.2 Importance of Coordinated Marketing Channels

With global international trade opening new markets for farmers in developing countries, for many African countries, export of horticultural crops provide opportunities in poor agricultural sector (Dolan *et al.*, 1999). Although, exports of horticultural crops may favor more capital-intensive, medium to large-scale farmers, small-scale producers also benefit through cooperatives or consolidated small scale holding and increased employment opportunities.

The requirements for horticultural exports would establish quality and safety assurance programs in horticultural sector at national and regional levels. This help to normalize,

maintain and optimize product quality and improve efficiency in the market sector (Moustier *et al.*, 2003).

Lamentably, marketing of agricultural produce are highly complex, involving long marketing channels, large number of middlemen, many types of physical, social, and economical facilitating marketing functions. Furthermore, the majority of small-scale farmers in Tanzania are marginal, small, scattered, and do not have sufficient time, knowledge and skills for scientific marketing of their produce (Dijkstra, 1997). Therefore, it is important to organize small-scale farmers in Tanzania to the growing global markets for fruit and vegetable.

1.3 Fruit and Vegetable Marketing in Tanzania

In Tanzania, like in other developing countries, fresh fruit and vegetable trade is under many small producers who have to look for markets internationally on individual bases. The FFV supply chain in Tanzania is very complex and disorganized (Lynch, 1994). Existing supply chains are based on the contacts and knowledge of the people involved in the trading and not just in the presence of physical roads, buildings and vehicles (Lynch, 1994).

In general, fresh fruit and vegetable are sold through five different chains (Table 1): the local village markets, regional markets, national market and export market (Eskola, 2005), and the supermarket (Weatherspoon, 2003). Supermarkets purchase FFV from wholesalers and require large quantities, good quality products which are cultivated according to certain set safety standards (Wheaterspoon, 2003).

Table 1: Characteristics of the common FFV markets in Tanzania

	Local village markets	Regional markets	National markets	Export markets
Location	Cross roads near villages	Regional/District centres	Dar es salaam	Foreign
Traders	Women and children	Large medium and small traders	Large traders	Foreigners
Supply	Unreliable	reliable	reliable	reliable
Products	Local/limited choice/low quantity	Regional/broad range/low to large quantity	National/broad range/large quantity	National focused on special crops/large quantity

Source: Eskola (2005)

The success of the fruit and vegetable sector is largely based on the efficiency and flexibility of the marketing system. This is partly because a large share of the potential demand for fruit and vegetable is in the urban areas and in foreign markets. Therefore, the volume of horticultural production is highly dependent on the ability of markets to link producers and consumers (Nicholas and Ngigi, 2003).

In addition, the perishability of fruit and vegetable makes prices more volatile and production more risky. This increase the potential gains from the exchange of marketing information between producers and traders. Vertical coordination between producers and traders is therefore important in fruit and vegetable marketing, particularly when the producers are small-scale farmers.

1.4 Problem Statement and Justification

Horticulture is defined as the growing of fruit, vegetable and ornamental plants (Kusolwa, 2003). Fruit and vegetable, are the main horticultural crops, produced by small-scale farmers in Tanzania. The sector has few large-scale farmers essentially engaged in the floriculture and fresh vegetable production for export with advanced technologies and horticultural management skills (Kusolwa, 2003). However, the major potential for small-scale farmers lies on the export of fruit and vegetable to neighbouring countries, Middle East and Europe (Brigitte *et al.*, 2005).

Despite rapid and sustained growth of the horticulture sector and fresh fruit and vegetable exports, the overall contribution of Tanzania in the international market is still small. For the past decade, over 90% of all fruit and vegetable produced was consumed locally, either on-farm or through domestic markets. Meanwhile about 90 % of small-scale farmers in all regions of Tanzania produce horticultural products, among them, less than 2 %, are export oriented (Bawden *et al.*, 2002).

Moreover, few small-scale farmers have succeeded in producing for the export market, but still they face a daunting set of challenges. The most reported challenges include, lack of storage facilities, poor record keeping, unreliable input delivery, knowledge on Global Good agriculture practices (GlobalGap) and contractual arrangements (Brigitte, *et al.*, 2005). The short post harvest life span of horticultural crops also puts the enterprise at high risk. It takes only few days for most of the horticultural produce to rot after being harvested. The short term post harvest life span, and the quality attributes required by consumers of horticultural crops, necessitate a systematic and an effectively coordinated chain.

Several studies have been conducted on the horticulture sector in Tanzania. Some of which were: "Markets of horticultural crops" (Mbelwa, 1999). "Fresh fruit market in Tanzania: prospect for international marketing" (Nyange *et al.*, 2000). "Vegetable market in Mgeta, Morogoro district", (Ashimogo and Lazaro, 1989). "Economic analysis of Vanilla Production and Marketing", Bukoba district (Mutayoba, 2005), and "Evaluating production and marketing potential for paprika as an alternative crop to tobacco: Urambo, district" (Nathania, 2007).

Regardless of the useful studies in the past, there is still paucity of information regarding profitability, movement and coordination of fresh fruit and vegetable export marketing and institution binding chain actors, hence challenge implied to small-scale farmers to remain competitive and cope with international market forces. This study aimed at investigating the profitability and coordination of export marketing channels of fresh fruit and vegetable in Tanzania using a case study of Arumeru District.

Fresh fruit and vegetable chain calls for great coordination between the various actors in the chain in order to remain competitive with fruit and vegetable production and marketing, and argue for more sustainable systems of production and support for local and international markets. Therefore finding from this study is aimed at providing information that will help policy makers, NGOs and other stakeholders in designing appropriate programmes for small-scale farmers and improving performances of the fresh fruit and vegetable sub sector in Tanzania.

1.5 Objectives of the Study

1.5.1 General objective

To investigate the profitability and coordination of fresh fruit and vegetable export marketing channels by small-scale farmers in Tanzania.

1.5.2 Specific objectives

i. To describe Tanzania's fresh fruit and vegetable export marketing channels.

ii. To carry out a profitability analysis of the export of fresh fruit and vegetable by small-scale farmers.

iii. To determine factors governing small-scale farmers' choice of an export marketing channel.

iv. To identify challenges facing marketing agents within the fresh fruit and vegetable export market channels.

1.5.3 Hypothesis to be tested

i. Export marketing channels of fresh fruit and vegetable in Tanzania are not vertically integrated.

ii. Selling fresh fruit and vegetable to export market is not profitable to small-scale farmers than selling to domestic market.

iii. Prices, mode of payment, quantity supplied and rejection rate are not factors determining the choice of the market channels.

iv. Quality characteristics, specifically storage facilities, record keeping, input delivery by buyers and GlobalGap protocol, and Contractual arrangements are not major challenges facing marketing agents within the FFV export marketing channels.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Overview

This section reviews global literature on importance of fruit and vegetable, fresh fruit and vegetable export marketing channels in Tanzania, and the theoretical approaches of export market channels. This focus intends to stimulate situations to enhance proper analysis of the key outstanding issue under this study.

2.2 The Importance of Fruit and Vegetable in Tanzania

Producing fruit and vegetable is profitable and small-scale farmers can earn significantly more as compared with growing traditional staple food crops (Von Braun, 1995, Weinberger and Lumpkin, 2005). Fruit and vegetable production is also labour intensive and has the potential to provide significant employment as well as income (Weinberger and Swai, 2006). Increasing fruit and vegetable production can not only bring improved economic opportunities for small-scales, but their increased consumption can also help overcome widespread micronutrient deficiencies among Tanzania's societies (Weinberger and Lumpkin, 2005).

2. 3 FFV Export Marketing Channels in Tanzania

The export-oriented horticultural sector across Eastern Africa has grown considerably in recent years. A well-studied example has been the green bean export industry in Kenya. The global demand for year-round availability of fresh fruit and vegetable has propelled the growth of the export of fruit and vegetable sub-sector (Jaffee, 1995; Kimenye, 1995).

In Tanzania, fresh fruit and vegetable export marketing channels vary widely, but they can be roughly classified according to the degree of vertical integration among the

largest fruit and vegetable exporters. It is estimated that about 40% of their supplies of fresh fruit and vegetable come from medium and large scale farmers and only 18% from small-scale farmers (Dolan and Humphrey, 2000).

Another channel involves exporters who contract farmers to produce fruit and vegetable for export (Dijkstra, 1997). The contract agreements between exporters and farmers are often unwritten and are subject to frequent disputes. If the market price falls, the exporter may fail to pick up the produce and try to source elsewhere. If the market price rises, farmers may sell elsewhere and default on the agreement (Jaffee, 1995; Kimenye, 1995). Moreover, different modes of payment prevail among FFV market channels.

2.3.1 Modes of payment

According to Nyange *et al.* (2000); when buying fresh fruit and vegetable from producers or rural middlemen, 40% of wholesalers paid in cash whereas 7% got the produce on credit. However, the largest proportion (53%) used both modes depending on the supply and demand conditions. When there is over supply in the market, producers normally sell their produces on full or partial credit and they get the rest of their payment after the wholesaler has sold the produce. Sometimes, producers minimize the risk of failing to sell at very low prices by renting out their trees to wholesalers or rural middlemen. Mbelwa (1999) also found that, traders pay cash upon collection of fruit and vegetable. In some cases traders and farmers have contractual arrangements at which traders extend loans to farmers with condition that farmers will sell produces to the particular trader during harvesting period and pay back the loan.

2.4 Fresh Fruit and Vegetable Export Market Requirements

The main market for fresh fruit and vegetables is Europe and the Middle East, where there has been an increasing concentration of retail sales through major supermarket chains. As a result of consumer pressure and increased liability issues these retailers have enforced food safety and food quality requirements on their suppliers by implementing private agricultural standards such as Global good agricultural practices (GlobalGap) (Tineke, 2003). With the formulation and implementation of production and processing standards, the retailers have significantly altered the supply chains. This has resulted to an increased vertical integration between the producers and retailers, and in some cases to an increased competition between producers (Jaffee and Maskure, 2005). in turn, large retailers are now effectively governing the value chains by virtue of the private standards they enforce on suppliers to protect themselves and consumers (Ponte and Gibbon, 2005). It can be difficult for FFV small-scale farmers to comply with ever rising standards and to participate in this demanding business environment (Cacho, 2003; Temu and Marwa, 2007).

Thus, a study on fresh fruit and vegetable export marketing channel is vital in order to identify the challenges facing small-scale farmers towards export market. This would allow interventions geared towards improving the FFV flow from farmers to consumers. Also, may help development agencies such as USAID, DFID and GTZ as well institutions such as TAHA, and other FFV stakeholders to link small-scale farmers to these potentially lucrative markets by focusing on compliance with the required standards.

2. 5 Theoretical Approaches of Export Market Channels Study

This study is based upon the theoretical concepts enshrined in; (i) Industrial organization theory (IO), (ii) Marketing channel theory and (iii) The New Institutional Economics

(NIE). However, NIE originates from economists who criticize and identify weakness in the traditional neoclassical approach. Two fields within the NIE have received particular attention, namely the Industrial Organization and the Transaction Cost Economics.

2. 5.1 Industrial organization theory

The Industrial organization (IO) theory is relevant for this study, because it either deals with (i) functioning of markets (Tirole, 1989), (ii) resource allocation through market systems (Scherer and Ross, 1990), (iii) the structure of firms and (iv) markets and their interactions (Carlton and Perloff, 1994). Further, Carlton and Perlof (1994) distinguish two major approaches to the study of industrial organization. The first approach is the structure-conduct performance analysis. An industry's performance which explains the success of an industry in producing benefits for consumers depends on the conduct of firms which, in turn, depends on the market structure i.e. factors that determine the competitiveness. The second approach is the price theory, this uses economic incentives to explain market phenomena. Specific applications of price theory such as transaction cost analysis and game theory are considered to be helpful in explaining the structure, conduct and performance of markets. Competition is assumed to be the main force that helps to solve economic performance problems. Several arguments in favour of perfect competition have been put forward, e.g. efficiency arguments, and market qualifications and doubts (Scherer and Ross, 1990).

Therefore, this study uses the concept of market qualifications and doubts in explaining requirements for small-scale farmers of fresh fruit and vegetable in Tanzania accessing export markets.

2. 5.2 Marketing channel theory

The marketing channel is the trade or distribution channel and is defined by Stern *et al.* (1996) as a set of interdependent organizations involved in the process of making a product or service available for consumption or use. The fundamental activity in marketing channels is the transaction, i.e., the act of exchange between economic agents (Achrol *et al.*, 1983). The channel follows a vertical structure where products flow from producer to the ultimate consumer. Producers, wholesalers and retailers as well as other channel actors exist in channel arrangement to perform marketing functions that contribute to the product flow. Actors that stand between producers and final users are known as intermediaries.

The marketing channel, which starts with the farmer and his production system and ends with the consumer and his consumption habits, is a two way flow of market signals. Channel actors and channel environments e.g. agricultural policies influence FFV small-scale farmers on decision whether to sell their produces to export markets or domestic markets (Fig. 1).

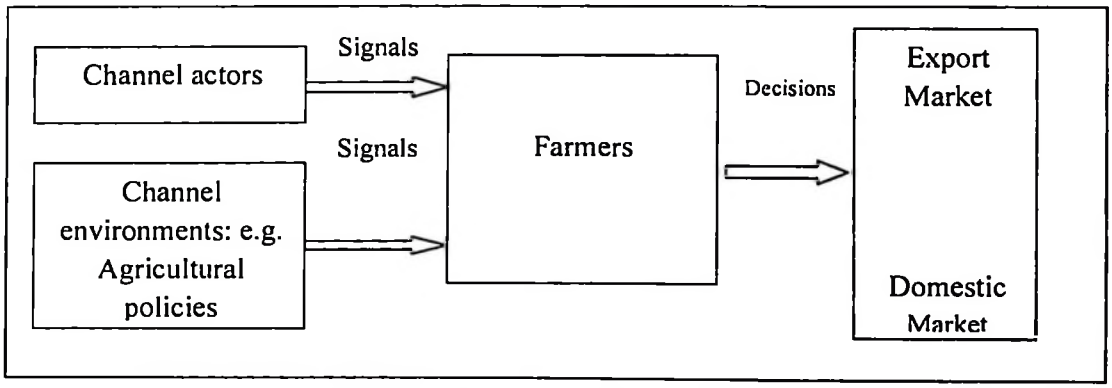


Figure 1: The different flow of market signals within FFV export channels

Source: Castavo (2000)

Other marketing channels are; Conventional marketing channel networks (CMC) and vertical marketing systems (VMS). In conventional marketing channels (CMC), subsequent stages in the assembly and distribution of commodities are connected by the market. The co-ordination among channel members is primarily achieved through bargaining and negotiation. The actors tend to be preoccupied with volume, costs and investment of the marketing process (Stern and El-Ansary, 1992). On the other hand, Vertical marketing systems (VMS) are developed to achieve control over the costs and quality of the functions performed by various subsequent channel members. A VMS is a network of interconnected units or firms in which market exchange transactions are substituted by intermediaries (Coase, 1937). Co-ordination among channel members is achieved through the use of comprehensive plans and programs. Mechanisms to achieve co-ordination and co-operation among channel members may be based on the use of power through rewards, coercion, expertness, identification and legitimacy (Stern and El-Ansary, 1992). VMS are administered systems in such a way; co-ordination is achieved through programs developed by one or a few firms, contractual systems which is a co-ordination among channel members is achieved through contractual agreements, while for corporate systems all activities are done within one company.

Thus, this study tries to see if linkage exists within FFV export marketing channel and between export marketing channels. Also if the marketing channel exhibits a high degree of vertical market integration which in turn position FFV actors to better coordination of upstream and downstream market activities. A firm having a lesser degree of vertical integration nonetheless can form agreement with supplier and channel partners to achieve better coordination.

2. 5.3 Institutional economics theory

The theory of institutional economics focuses on the question of how alternative sets of social rules: institutional structure, property rights and economic organizations affect behaviour, allocation of resources and equilibrium of the firm. Institutions are the organizing mechanisms of a society which describe property rights (Campbell and Clevenger, 1978). Property rights are the rights that individuals appropriate over their own labour and the goods and services they possess (Eggertsson, 1990). Institutions can be understood in two ways. The first is sociological: any behavioural regularity is an institution. The second is economic: institutions are the rules of the game in a society, or the humanly devised constraints that shape human interaction (North, 1990).

Markets are institutions because they embody rules and regulations, formal or informal, which govern their operation. Contracts are institutions in that they lay down rules, which govern activities of the contractual parties. Codes of conduct are institutions that can constrain the relationships between different individuals and groups (Nably and Nugent, 1989). In institutional economics, commodity markets are supposed to be imperfect and characterized by transaction costs which require institutions to regulate property rights and contracts, for example, marketing organizations, standardization in grading or in contracts.

Moreover, Eggertsson (1990) distinguishes: (i) the information costs which is the search for information about price, quality, potential buyers and sellers, (ii) the bargaining costs entailing the bargaining process and (iii) the enforcement costs, essentially the costs of making contracts, the monitoring of contractual partners, the enforcement of the contract, and the protection of property rights (Jaffee, 1992).

Thus, institutional economics theory is relevant in studying how contractual arrangements, identification of institutions existing in among Tanzania's fresh fruit and vegetable export marketing channels. This is vital for the improvement of marketing organization, standardization in grading of produces and contracts within the fresh fruit and vegetable sub sector.

2. 6 Cluster Analysis

Cluster analysis is a statistical method used to classify objects into categories. For this study it is the FFV exporters. Cluster analysis is a multivariate procedure for detecting groupings in the data. Cluster analysis begins with no knowledge of group membership. For segmentation analysis first the number of clusters has to be found. The items are grouped together according to a chosen statistical measure of "nearness".

However, Everitt (1980) recommended that the ultimate definition of a particular clustering exercise should rest on the researcher's comprehension. The researcher must consider carefully the purpose of clustering and therefore the methods and variables to use. Hence the reason for being selective in choosing variables for this analysis and can be realized by doing hierarchical clustering using Ward's method. Ward's method is an often-used method for segmentation. Compared to other segmentation methods Ward's method is more accurate. Ward's technique consistently outperforms other methods (Kuiper and Fisher, 1975; Mojena, 1977). In the hierarchical clustering method, clustering begins by finding the closest pair of cases according to a distance measure and combines them to form a cluster. The algorithm continues one step at one time, joining pairs of cases, pairs of clusters, or a case with a cluster, until all the data are in one cluster. The clustering steps are displayed in a dendogram. The method is hierarchical because once two clusters are joined; they remain together until the final step.

Everitt (1980) had noted its limited use in economics and explained its useful application in finding true typologies, predictions based on groups, hypothesis generation and testing, and data exploration. Kydd (1982) observed its potential in development economics and advocated its use in rural development strategies: for identifying primary social categories, evaluation of project analysis methodologies, planning for adaptive crop research, testing efficiency indicators for rapid rural appraisal, extension and credit strategies and selection of input packages.

With time its usage gained popularity. Among various rural development and economic studies that have used cluster analysis are: Change in consumption pattern in the OECD area. Cluster analysis employed to derive country groupings similar in dietary structure (Blandford, 1984); Determinants of demand for organic food in Germany. Developed consumer typologies, Germany (Al vensl eben and Al tmen, 1987); The use of cluster analysis in distinguishing land use patterns in traditional Moroccan pastoral system. Developed land use pattern typologies (Artz and jamtgaard, 1988); A study of financial market in Tanzania (Temu, 1994) used cluster analysis in grouping homestead Farm enterprises.

It is therefore apparent that cluster analysis has valid use in economics studies. It is preferable to subjective classification using simply judgment, when statistically homogenous groups are wanted. Therefore, cluster analysis has been adopted for this study for describing Tanzania's fresh fruit and vegetable export marketing channels based on Global Good agriculture practices i.e. GlobalGap protocol.

2. 7 Gross Margin Analysis

The main motivating factor for traders to guarantee their capital is the level of profit received from their capital invested (Sichinga, 1993). The most profitable segment along the FFV value chain will attract capital relative to the lower profitable segments.

There are various measures of profitability of the enterprises which are; Gross Margin (GM), Return on Investment (ROI), Benefit-Cost Ratio (B/C), Internal Rate of Return (IRR) and Marketing Margin (MM) (Turuka, 2000). However, Kotler and Armstrong (2006) revealed that to date there is no adequate measurement of profitability available in the marketing sector. A survey done by Kotler and Armstrong (2006) for marketing executives and professionals revealed that 68% of marketing executives have difficulties in measuring profitability on investment and 73% of them reported that there is no adequate profitability measurement tool available.

However, the GM is an important measure of resource efficiency in Small and Medium Enterprises (SMEs). GM is a gross return minus the total variable expenses, which can be expressed in nominal value, ratios or as a percentage of return (Debertin, 1993).

The size of GM under a competitive market condition is the outcome of supply and demand for marketing functions, and should therefore be equal to the minimum cost of service provided plus normal profit (Scarborough and Kydd, 1992). The normal profit is the least payment a trader or the owner of the enterprise would be willing to accept for performing the entrepreneurial functions. Therefore, receiving normal profit is important in order to keep the trader or owner from withdrawing the capital and managerial effort and putting it into other alternative business (Kotler and Armstrong, 2006).

Therefore, to calculate GM of different enterprises in different segments along the value chain of FFV marketing requires a detailed analysis of the accounts of enterprises, noting precisely the cost incurred and the value added at each stage along the value chain (Debetin, 1993). GM analysis has been concerned with identifying profit obtained by traders at each stage along the value chain of FFV marketing. However, since many traders do not keep records, and when kept, most of it is inaccurate, secondary and primary data have to be relied upon in calculating the GM.

$$\textbf{Gross Margin (GM)} = Total\ \text{Re}venue(TR) - Total\ Cost(TC)$$

Furthermore, Debertin (1993) identified some problems of using GM as a measure of profitability, which are failure to deduct the opportunity costs for the money invested in the enterprises. In addition it does not cost own labour included in the operation of the enterprises. Ponte (2002) noted that the technique has several disadvantages including failure to account for the variation of fixed costs, and failure to make allowances of costs for depreciation and obsolescence of fixed assets.

However, Phiri (1991) reported that GM is still the most satisfactory measure of resource efficiency to Small and Medium Enterprises (SME). It gives a good indication of the financial health of enterprises and shows deep insight into traders management efficiency of the enterprises (Hammod, 2001).Thus, without adequate GM received by traders, their ability to pay operating costs and hence their businesses sustainability is jeopardized (Hammod, 2001).

Therefore, an examination of enterprises profitability along the value chain will harmonize the attitude of consumers, and policy makers towards FFV traders who are

thought to be exploiters. The amount of profit received will separate facts from prejudice and enable one to refute allegations that traders exploit both farmers and consumers.

Moreover, understanding GM across different enterprises is vital because traders tend to shift tied capital to more highly profitable enterprises or segments in the FFV marketing systems. Therefore, the high GM earning enterprises warrant the traders' working capital to more profitable enterprises. Thus, working capital is switched off from low GM enterprises to highly GM earning enterprises (Rweyemamu, 2001). Despite the weaknesses of GM as a measurement of profitability, it remains the most satisfactory measure of resource efficiency. Therefore, GM was used to identify the most profitable node in the value chain of FFV between farmers selling their fresh fruit and vegetable to exporters and those selling to domestic market.

2. 8 Logistic Regression Model

As an analytical tool employed in this study emanates from the framework that if the dependent variable in a model is a binary variable, one of the models that can be used is the Logistic model. This model uses the standard normal distribution to reflect the probability that a certain choice takes place (Greene, 1997). The assumption underlying Logistic analysis is that there is a response function of the form;

$$Y_t^* = \alpha + \beta X_t + u_t$$

Where X_t is observable but where Y_t^* is an unobservable variable. What we observe is a dummy variable y_i defined by

$$Y = \begin{cases} 1 \; if \; y^* > 0 \\ 0 \; otherwise \end{cases}$$

The criterion that is often used to determine the quality of the model is the McFadden's R-squared (Maddala, 1992). This criterion takes a closer look at the contribution of the explaining variables in the model, by looking at the value of the Log-likelihood:

$$\frac{1-\ell}{\ell}$$

Where: ℓ is the restricted log likelihood.

Therefore Logistic Model is used to represent choice between two mutually exclusive options; for example, a grower may decide to sell his fruit or vegetable to export or traditional market.

However, the major weakness of Logistic models is the implication that the choice between any two groups of alternatives depends solely on the characteristics of the alternatives being compared, and not upon the characteristics of any other alternatives in the choice set. Also imposes the restriction that the distribution of the random error terms is independent and identical over the alternatives, causing the cross-elasticities between all pairs of alternatives to be identical, and this can produce biased estimates.

Despite these weaknesses, Logistic model is mathematically simple, and is widely used. The nested Logistic model allows the error terms of pairs or groups of alternatives to be correlated; therefore restrictions on the equality of cross-elasticities may be unrealistic. Logistic models which allow different cross-elasticity between pairs of alternatives include: the paired combinatorial Logistic, the cross-nested Logistic, and the product differentiation model.

Therefore, logistic regression model was adopted for this study for the identification of the factors governing the choice of the particular FFV export marketing channel and challenges facing marketing agents within the fresh fruit and vegetable export market channels.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Overview

This chapter represents the methodology which was used in the study. It covers the conceptual frame work, the description of the study area and the justification for its choice, the data and their sources, questionnaire design, sampling techniques, data collection methods and data analysis techniques. Limitations of the study methodology are given at the end of the chapter.

3.2 Conceptual Frame Work

The framework displays a pictorial representation of the relationship existing between accesses to export market, factors governing the choice of a particular market channel and challenges facing FFV export marketing channel agents. The decision of whether or not to sell to export markets and consequent strategic decisions can be understood as outcomes of growers' efforts to maximize the expected profits of their incomes. The expected profits maximization problem takes into account both profit maximization and risk. Factors influencing the decision outcome are the relative risks and returns of each market, specifically the prices, input costs and variation in income that are anticipated from participation; and growers' capacity to participate effectively in each market, which is a function of their capital characteristics including both "soft" capital such as education and other forms of human capital as well as "hard" capital such as equipment and infrastructure, and exogenous factors.

In general, export market channels offer higher returns than traditional market channels, though costs and barriers to entry and risk are also higher. The organizational and institutional changes resulting from innovations in large retail chains' procurement

innovations combined with their large scale of procurement, gives rise to two areas in which export market Channels differ from traditional market channels with implications for supplier participation and welfare.

Export markets seek large volumes from their suppliers, high and consistent quality, and a range of different items particularly from firms with certification. Moreover, suppliers to the export markets deliver a large proportion of their total sales to very few buyers with whom they have normalized working relations where transaction agreements generally specified in a formal agreement that they sign at the beginning of their working relationship.

They thus benefit from considerable savings on recurring transaction and logistics costs. There is also a degree of security in selling to the export markets which are known for being consistently responsible and professional in making payments. In contrast, many smaller buyers are unknown and in precarious financial condition, increasing the risk of non-payment or renegotiation of payments due to either their financial condition or opportunism. Finally, in addition to differences in the volumes, variety and quality of produce sought by export markets, they also have service, logistical, and certification requirements of their suppliers that are uncommon in Traditional Markets. Service and logistical requirements include grading of produce, specialized packaging, and delivery to individual store outlets, unloading of produce, stocking of shelves, and product labels that provide nutrition, customer service and traceability information. Certification requirements are becoming increasingly common, and generally relate to food safety issues. For example suppliers may need to get certification of the quality of water they use for irrigation, and increasingly there are requirements for the documentation and

certification of agricultural and processing practices such as GAPs, GMPs and HACCP in some cases.

As a result of these differences, there are significant barriers to entry for growers who seek to market their produce to the export market. These include (1) investments to ensure consistent compliance with quality standards, e.g. greenhouses, irrigation, vegetables and fruits washers and packing houses, (2) infrastructure to comply with service and logistical requirements, e.g. delivery trucks, computer and internet access for product orders, (3) high fixed costs of qualifying for supplier registries, even though recurring transaction costs are lower as a result of being on the registry, and (4) Certification and documentation costs which include not only significant initial outlays for certification but also periodic expenditures in testing for adequate water quality, presence of microbes and pesticide residues.

The differences in transaction characteristics and barriers to entry mean that suppliers who will participate in the export market Channel need high levels of professionalism, the ability to produce a consistently high-quality product, access to investment capital and modern, market oriented management practices. This study focuses on the export marketing channels i.e. from growers, marketing and distribution of fresh fruits and vegetables (Fig. 2).

Arumeru district is one of the six districts of Arusha region. The district is located north east of the region, bordering Kilimanjaro region to the east, Manyara region to the south and Arusha rural district to the west.

3.3.2 Climate and topography

The district has two rainfall patterns, with short rains starting in September and ending in December and long rains starting in March and ending in June. There are significant variations in rainfall distribution between highlands and lowlands. The highlands are bimodal and receive between 800mm to 1,200mm of rainfall and lowlands are unimodal receiving 500mm to 700mm of rainfall. The mean monthly temperature of district is 20°C. However during the cooler period (June - August) the mean average temperature drops to 17°C. Therefore the district has two agricultural seasons. Moreover, the district is divided into three agro ecological zones, which are Upper zone, Middle zone and Lower zone.

3.3.2.1 Upper zone

This is a mountainous area rising between 1400 m and 1800 m above sea level. It has an average annual rainfall of about 1000mm. Forests forming water catchments for most of the streams cover most land area. Main economic activities are agriculture and livestock kept under zero grazing system. Crops grown include coffee, pyrethrum, banana and round potatoes.

3.3.2.2 Middle zone

This zone rises between 1000m and 1350m above sea level, receiving an average annual rainfall of 500mm. major economic activities are livestock keeping and agriculture. Crops grown in this belt are coffee, banana, maize, beans, wheat, and horticultural crops.

3.6.4.2 The implications for the quality

The quality a farmer delivers also depends on a number of factors which may lead to a choice of a particular channel as specified in the model below:

$$\ln(\frac{p}{1-p}) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \mu_i$$

Where: $\ln(\frac{p}{1-p})$ = The buyer (with 1=exporter and 0=middleman)

β'= The coefficients belonging to the explanatory variables;

X = The explanatory variables, with

X_1= The number of years a farmer has been farming

X_2= The actual rejection rate (between 1-100)

X_3=Whether the farmer has heard from GlobalGap (1=yes and 0=no)

X_4 = Whether the farmer keeps records (1=yes and 0=no)

X_5= Whether the buyer provides inputs / seed / pesticides fertilizers to the farmer (with 1=yes and 0=no)

X_6 = Whether the farmer has storage facilities (1=yes and 0=no)

X_7 =Whether the buyer always buys the total amount of FFV the farmer harvested (with 1=yes and 0=no)

X_8 = Whether the farmer has an agreement with his buyer regarding the quality he should deliver (1=yes and 0=no)

β_1 β_2 β_3, β_4 β_5 = Parameters to be estimated;

μ_i= random effect term $\mu \sim N(0, p_i(1-p_i))$

3.6.4.3 Challenges facing FFV Export marketing actors

Hypothesis (iv) which states "Quality characteristics specifically; storage facilities, record keeping, input delivery by buyers and GlobalGap protocol and Contractual arrangements, are not major challenges facing marketing agents within the fresh fruits and vegetables export market channels was tested using binary logistic regression model using maximum likelihood method, and the model was specified as;

$$\ln(\frac{p}{1-p}) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \mu_i$$

Where: $\ln(\frac{p}{1-p})$ is the dependent variable in the natural log of the probability of selling to the export market (p) divided by the probability of not selling to the export market (1-p) it takes a value of 1 for selling to exporters and 0 for not selling to exporters;

α = general mean (intercept constant);

X_1 =Land possession ($X_1 = 1$ if Yes; $X_1 = 0$ otherwise)

X_2 =Input delivery by buyers ($X_2 = 1$ if Yes; $X_2 = 0$ Otherwise);

X_3 =Having storage facilities (if yes =1 and; $X_3 = 0$ otherwise);

X_4= Record keeping (if yes =1 and 0 otherwise)

X_5 = Having contract farming (if yes =1 and 0 otherwise)

X_6 = Farmer has heard from GlobalGap (1=yes and 0=no)

β_1 β_2 β_3, β_4 β_5 = Parameters to be estimated;

μ_i = Random effect term $\mu \sim N(0, p_i(1-p_i))$

Multicollinearity among independent variables was running the Tolerance and Variance Inflation Factor (VIF). Tolerance is an indicator of how much of the variability of the specified is not explained by the other independent variables in the model and was calculated using the formula $1-R^2$ for each variable. For value less than 0.10 indicates that the multiple correlation with other variable is high, suggesting possibility of

multicollinearity. For VIF is just the inverse of Tolerance value. VIF above 10 would indicate multicollinearity.

3. 7 Limitation of the Study

The study has a number of limitations that had to be taken into consideration. Although all interviews have been done personal, differences in interpretation of the questions and answers might still be a problem. Because this problem has happened by all interviews, it may be neglected. The data were collected in September 2008. This is important to know, because the question regarding the price paid to farmers and the price received from their buyers will be influenced by the time of the year. Because these prices vary a lot during the year, it is difficult for the farmers and the buyers to determine these prices. Therefore the average number was used in the analyses.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Overview

This chapter presents results and discussion of the study: Results are presented in various forms, including percentages, statements, tables and figures. Results presented are based on objectives of the study and hypothesis. Discussion follows immediately to interpret the trend shown by the results and reasons.

4. 2 Socio - economic Characteristics of Respondents

Socio-economic characteristics for small-scale farmers participating in FFV export marketing channels in the study area were analysed. Results revealed that 88.3 % of the FFV enterprises are headed by males, implying that FFV sub sector is male dominated. This situation may be attributed by the fact that fruit and vegetable production and marketing is labour and capital intensive and hence a bias against female who apparently have less of it. Moreover, females have additional gender specific responsibilities. Some of the constraints were noted by Cagatay *et al.* (1995). Women have limited access to the means of production such as land, support service such as credit, lack of family financial support, and they are supposed to fulfill other household roles.

Marital status showed that 83.3% of the respondents were married, and 65% of them had primary school education in such a way that they could not get any employment to the public as well as private sectors which require more qualification. So they had to involve themselves to FFV sub sector in order to earn income for their families' expenditure. The age of the farmer influences participation in FFV marketing, results revealed that 50% of FFV marketing is performed by young farmers who are aged between 16 -35 years. The

implication is that FFV marketing along the value chain is performed by the economically active group in the population (Table 3).

Table 3: Social economic characteristics of FFV farmers

	Village of respondent													
	Singisi		Kwafundi		Makiba		Maweni		Ambureni Moivaro		Usariver		Total	
Characteristics	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Gender														
Male	12	20.0	2	3.3	7	11.7	8	13.3	12	20.0	12	20.0	53	88.3
Female	0	0.0	0	0.0	3	5.0	4	6.7	0	0.0	0	0.0	7	11.7
Total	**12**	**20.0**	**2**	**3.3**	**10**	**16.7**	**12**	**20.0**	**12**	**20.0**	**12**	**20.0**	**60**	**100.0**
Education level														
Primary Education	9	15.0	2	3.3	9	15.0	10	16.7	7	11.7	2	3.3	39	65.0
Secondary education	1	1.7	0	0.0	1	1.7	1	1.7	4	6.7	5	8.3	12	20.0
Post secondary	1	1.7	0	0.0	0	0.0	1	1.7	0	0.0	3	5.0	5	8.3
Dip.Agriculture	1	1.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	1.7
Others(College, University)	0	0.0	0	0.0	0	0.0	0	0.0	1	1.7	2	3.3	3	5.0
Total	**12**	**20.0**	**2**	**3.3**	**10**	**16.7**	**12**	**20.0**	**12**	**20.0**	**12**	**20.0**	**60**	**100.0**
Marital status														
Single	1	1.7	0	0.0	0	0.0	2	3.3	4	6.7	3	5.0	10	16.7
Married	11	18.3	2	3.3	10	16.7	10	16.7	8	13.3	9	15.0	50	83.3
Total	**12**	**20.0**	**2**	**3.3**	**10**	**16.7**	**12**	**20.0**	**12**	**20.0**	**12**	**20.0**	**60**	**100.0**
Age														
Young (Aged 16-35 Years)	6	10.0	0	0.0	2	3.3	7	11.7	7	11.7	8	13.3	30	50.0
Middle aged (36-50 Years)	5	8.3	2	3.3	8	13.3	5	8.3	4	6.7	3	5.0	27	45.0
Elder (>50 Years)	1	1.7	0	0.0	0	0.0	0	0.0	1	1.7	1	1.7	3	5.0
Total	**12**	**20.0**	**2**	**3.3**	**10**	**16.7**	**12**	**20.0**	**12**	**20.0**	**12**	**20.0**	**60**	**100.0**

4. 3 Conditions for Accessing Export Market of FFV

Regarding conditions for accessing export market of fresh fruit and vegetable, 31.7% of respondents reported that, for some one to access the export market has to adhere to basic hygiene of the crops s/he produces and the sanitation of the production area. This is due to the fact that any residue of chemicals or other materials found of the produces may lead to high rejection of the whole consignments hence loss to the farmer.

Results further show that 33.3% responded to have no knowledge on the conditions required for the export market, and most of them were those selling FFV to domestic market. Moreover, 15% and 20% of the small-scale farmers reported; certification according to GlobalGap protocol and having certified workers in the farm respectively to be the conditions for accessing the export market. About 66.7% of the small-scale farmers of FFV had information about the conditions required for the export market in the study area (Table 4).

Table 4: Conditions for accessing export market channels of FFV

Village of respondent	Condition for accessing export markets								Total	
	Basic hygiene of crops and production area		Certification according to GlobalGap		Having certified workers		Have no knowledge			
	N	%	N	%	N	%	N	%	N	%
Singisi	4	6.7	4	6.7	4	6.7	0	0.0	12	20.0
Kwafundi	0	0.0	1	1.7	0	0.0	1	1.7	2	3.3
Makiba	0	0.0	2	3.3	1	1.7	7	11.7	10	16.7
Maweni	6	10.0	0	0.0	0	0.0	6	10.0	12	20.0
Ambureni Moivaro	6	10.0	0	0.0	0	0.0	6	10.0	12	20.0
Usariver	3	5.0	2	3.3	7	11.7	0	0.0	12	20.0
Total	**19**	**31.7**	**9**	**15.0**	**12**	**20.0**	**20**	**33.3**	**60**	**100.0**

4. 4 Market Features of FFV and Institution Support

4.4.1 Monitoring

This study revealed that Serengeti Fresh Limited had an out-grower production and quality control manager who makes periodic visits to each grower who supply FFV direct to the Company. His activities among others are to provide information on quality of the produces required by costumers, harvesting dates and other technical know how pertaining the FFV sub sector. Moreover, for traders who were selling either to the export company or doing domestic trade were visiting the growers to see if the crops were ready to be harvested depending on specifications of their costumers.

4.4.2 Input control

Results show that 68.3% of the small-scale farmers of fresh fruit and vegetable were receiving input from buyers. This imply that buyers had control on the quality and type of crops they wanted to buy, hence they have good management on such activities as irrigation timing or pest control. These activities will only be done when the buyer brings the required input at that particular time. This had implications even on price setting of the produces which makes buyers to have more power over the price they offer (Table 5).

Table 5: Producers of FFV receiving input from buyers

Type of respondent	Farmers receiving input from buyers					
	No		Yes		Total	
	N	%	N	%	N	%
Producers of FFV	19	31.7	41	68.3	60	100.0
Total	**19**	**31.7**	**41**	**68.3**	**60**	**100.0**

4.4.3 Quality measurements

Several criteria for sorting and grading FFV were identified in this study. Among others, ripe fruits, weight, harvesting date after planting, size, straightness, color and general cleanliness of the produces. These were achieved through receiving guidance from the middlemen or inspector from the export company who had to visit all the farms which had contracts with or supplying their produces to the export company.

Furthermore, 57.6% of the farmers responded size, straightness, color and general cleanliness of the produces being measurements for the quality for produces such as Green beans, Snow Peas, Sugar Snaps , Sweet pepper and Baby Corn which require those quality measurements (Table 6).

These quality requirements had implication on the choice of the marketing channel of FFV by small-scale farmers. Farmers would choose a channel which has no rigorous quality requirements.

Table 6: Criteria used for sorting and grading of FFV for export market

Village of respondent	Criteria for sorting and grading FFV													
	Ripe fruits and cleanliness		Weight of Seeds		Harvesting date		Size and shape		Size, cleanliness, color and straightness		All the mentioned above		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Singisi	1	1.7	1	1.7	2	3.3	1	1.7	4	6.7	3	5.0	**12**	**20.0**
Kwafundi	0	0.0	0	0.0	1	1.7	0	0.0	1	1.7	0	0.0	**2**	**3.3**
Makiba	1	1.7	0	0.0	0	0.0	0	0.0	7	11.7	2	3.3	**10**	**16.7**
Maweni	0	0.0	0	0.0	1	1.7	2	3.3	6	10.0	3	5.0	**12**	**20.0**
Ambureni moivaro	0	0.0	0	0.0	0	.0	1	1.7	10	16.7	1	1.7	**12**	**20.0**
Usariver	0	0.0	0	0.0	0	0.0	1	1.7	6	10.0	5	8.3	**12**	**20.0**
Total	**2**	**3.3**	**1**	**1.7**	**4**	**6.7**	**5**	**8.3**	**34**	**56.7**	**14**	**23.3**	**60**	**100.0**

4.4.4 Price setting

Prices of FFV were set depending on supply and demand; results indicate that 31.7% of the FFV prices were set by both farmer and exporters. Furthermore, results show that only 25% of the farmers were able to set the price of their FFV depending on the market demand relative to costs incurred. Also, about 75% of the decision on price was done by buyers whether being exporters, assembler, middlemen, or wholesaler (Table 7).

This indicates that small-scale farmers of fresh fruit and vegetable though may have opinion on which actor gives the highest price, but at the end farmers are price takers, since in the end it will be the buyer who decides whether s/he wants to buy produces from a particular farmer.

Table 7: Price setting for FFV

	who set prices for FFV													
Type of respondent	**Farmers**		**Assemblers**		**Wholesalers**		**Exporters**		**Farmers and Exporters**		**middlemen and Exporters**		Total	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	N	%
Producers of fruits/vegetables	15	25.0	8	13.3	3	5.0	12	20.0	19	31.7	3	5.0	60	100
Total	**15**	**25.0**	**8**	**13.3**	**3**	**5.0**	**12**	**20.0**	**19**	**31.7**	**3**	**5.0**	60	100

4.4.5 Modes of payment

Analysis of the term of payments to different marketing agents revealed that both cash and credit systems were used. About 58% of farm owners were paid on cash by the

exporting company and middlemen. Results show that 36% were paid in cash by middlemen who had no contract with farmers. This result is nearly in agreement with that reported by Nyange *et al.* (2000). This is due to the fact that, farmers preferred to sell their produce to these middlemen since they needed immediate cash for their daily expenditures.

Furthermore, about 32% of FFV Producers were selling to the export company, and payments were done on credit basis, which were made twice a month: in the middle and at the end of the month (Table 8).

Table 8: Modes of payment

Buyers of FFV	Mode of payment				Total	
	Cash		Credit			
	N	%	N	%	N	%
Middlemen	22	36	6	10	28	46
Exporters	13	22	19	32	32	54
Total	**35**	**58**	**25**	**42**	**60**	**100**

4.4.6 Farmers' organizations

About 88.3% of farmers had no groups at any node along the FFV export marketing channel. This put farmers in the weak position to negotiate for their produces, because there were no contracts for their farming activities, changes on price could be made at any period depending on the costumer. But if they could have organizations they could stand in a better position to negotiate for the reasonable prices.

Results show that 11.7% of the farmers had small groups of not more than three people for helping each other during land preparation and harvesting, which had no impact on

farmers power to negotiate for prices of their produces. As found by ITF (2003) none of the new requirements for the value chain could have been obtained through continued reliance on independent small-scale farmers and wholesale markets.

Now only Serengeti Fresh Export Company dominates the FFV industry in Arusha. Therefore, due to lack of cooperatives and organizations to bulk and add value to FFV in particular, this challenge for small-scale farmers calls for formation of groups for them to benefit, in a globalized environment that require high quality produces, continuity of supply and safety standards (Table 9).

Table 9: Farmers' organizations

Village of respondent	Having farmers' organization/ group				Total	
	No		Yes			
	N	%	N	%	N	%
Singisi	11	18.3	1	1.7	**12**	**20.0**
Kwafundi	2	3.3	0	0.0	**2**	**3.3**
Makiba	9	15.0	1	1.7	**10**	**16.7**
Maweni	9	15.0	3	5.0	**12**	**20.0**
Ambureni Moivaro	11	18.3	1	1.7	**12**	**20.0**
Usariver	11	18.3	1	1.7	**12**	**20.0**
Total	**53**	**88.3**	**7**	**11.7**	**60**	**100.0**

4.4.7 Contractual arrangements in the production and marketing of FFV

The distribution and enforcement of contracts among farmers show that 10% had formal contract in trading of FFV, 33.3% had informal verbal contracts relying on trustfulness and 56.7% respondents had no contract of any kind. Channel actors who had formal contracts were between farmers and vegetable seed companies such as East African Seed Company.

Moreover, with middlemen contracts were mostly verbal, or if written they were not legally binding hence, poor enforced contracts. 33.7% responded their means of enforcement of the contracts was just trustfulness among the trading partners. However, when asked why they did not have formal contracts they said it was risky to have such contracts with undefined market outlets.

Moreover, it was found that, the peak months for the supply of FFV were mentioned to be March and October during the rain season. However, lack of contracts resulted in irregular supply of FFV both to the export market channel and local markets. Those who supplied throughout the year irrigated their farms during the dry season. Irrigation was accompanied with relay growing, especially for vegetables. Other farmers could buy produces from other farmers in order to maintain their continuity of supply to their buyer or exporting company (Table 10).

Table 10: Contract possession among farmers of FFV

Contract enforcement	Having contract farming				Total	
	No		Yes			
	N	%	N	%	N	%
Law	0	0.0	6	10.0	**6**	**10.0**
Trustfulness(informal/verbal)	4	6.7	16	26.7	**20**	**33.3**
No contract agreement	34	56.7	0	0.0	**34**	**56.7**
Total	**38**	**63.3**	**22**	**36.7**	**60**	**100.0**

4.4.8 Durability

Fresh fruit and vegetable are highly perishable hence they need to be treated carefully along the way to the final consumers. Also storage facilities are very important in order to maintain the quality. However, results revealed that 66.7% of the small-scale farmers in the study area had no storage facilities, even for those who had storage facilities were of poor quality. Consequently, most of the consignments of fresh fruit and vegetable reached the final destination in a poor quality, which lead to high rejection rate of the produces (Table 11).

Table 11: Possession of storage facilities by small holder farmers

Village of respondent	Possession of storage facilities				Total	
	No		Yes			
	N	%	N	%	N	%
Singisi	9	15.0	3	5.0	12	20.0
Kwafundi	2	3.3	0	0.0	2	3.3
Makiba	9	15.0	1	1.7	10	16.7
Maweni	6	10.0	6	10.0	12	20.0
Ambureni moivaro	9	15.0	3	5.0	12	20.0
Usaiver	5	8.3	7	11.7	12	20.0
Total	**40**	**66.7**	**20**	**33.3**	**60**	**100.0**

4.4.9 Institutional support

The study found that institutional support such as provision of training and extension services on: FFV production; processing and marketing were not adequate in the study area. Associations such as Tanzania Horticultural Association (TAHA) and Horticultural Development Council of Tanzania (HODECT) are just emerging and they are not yet helping small-scale farmers to search for reliable markets.

Furthermore, these institutions have high membership fees, of which small-scale farmers can not afford. Moreover, association such as TAHA is currently coordinating markets for produces from large flower and vegetable farms of which mostly are owned by foreigner investors.

4.5 FFV Export Marketing Channels Segmentation

The segments in which the Traders can be divided will be described in this section first. Then the channel choice of exporters concerning the middlemen they prefer to operate with will be described. To find out whether the interviewed middlemen can be divided into groups on the basis of GlobalGap requirements, a cluster analysis has been carried out. The variables that related to the GlobalGap protocol were:

i. Whether the middleman has heard from the GlobalGap protocol;
ii. Whether the middleman has storage facilities;
iii. Whether the farmers the middleman buys from have storage facilities;
iv. Whether the farmers the middleman buys from keep records;
v. Whether the middleman is able to trace the produce.

These variables have been used to see whether the FFV Traders can be divided into segments. However, cluster analysis results show that three final cluster centers were formed namely EA_1, EA_2 and EA_3 which are Exporter agents 1, 2 and 3 respectively. Furthermore, euclidian distances between final clusters centers were used to identify how far one cluster is separated from the other (Table 12).

Table 12: FFV Export marketing Final Cluster Centers

Variables	Clusters		
	EA_2	EA_1	EA_3
Heard information about GlobalGap	1	1	0
Ability to trace back produce	3	1	3
Farmers keep records of inputs used	1	1	1
Have storage facilities	1	1	2
Farmers possess storage facilities	0	1	0

EA_2, EA_1 and EA_3 are FFV exporter agents

Clusters have been classified using the five aspects mentioned above. The classifications of the clusters show that the 3-cluster solution generates distinguished clusters. One contains traders that meet all of requirements EA_1. One cluster groups traders that meet four fifth of the requirements EA_2, and the fourth cluster containing traders who meet about half of requirements completely EA_3 (Table 13).

Table 13: FFV Export marketing euclidian Distances between Final Cluster Centers

Clusters	EA_2	EA_1	EA_3
EA_2		2.071	1.414
EA_1	2.071		2.427
EA_3	1.414	2.427	
Size (N)	**3**	**10**	**1**
%	**21.4**	**71.4**	**7.2**

EA_2, EA_1 and EA_3 are FFV exporter agents

4.6.1 FFV Exporter Agents descriptions

The first cluster constituted of 71.4% of traders who meet all of the GlobalGap requirements. These are traders who have heard from the GlobalGap protocol and are able to trace the produce. Almost all traders receive their produce from farmers who keep records. All of them have storage facilities themselves and buy their produces from farmers who have storage facilities (EA_1).

The second cluster consists of 21.4% of traders (EA_2) who meet four fifth of the GlobalGap requirements. Within this group four fifth of the traders meet the requirements with regard to traceability, knowledge concerning the GlobalGap protocol. Also they have storage facilities, while almost all traders get their produce from farmers who keep records. However, they get their produces from farmers who have no storage facilities. But this aspect is of least important since the produces are taken directly to the export company the day they are harvested where there are modernized storage facilities.

The third cluster (EA_3): About 7.2% Traders meet about half of GlobalGap requirements. These traders meet all requirements except the two with regard to storage facilities of the farmers and information about GlobalGap. This group sells most of their bought produces to Nairobi and Mombasa (Kenya), of which buyers are not very much stringent on the aspect of GlobalGap. Also the produces are taken on the day they are harvested, so farmers need not to have storage facilities.

4.6.2 Deduced FFV Export Channels

There are four main export marketing channels of FFV used by small-scale farmers in the study area to market their produces. First is where the farmers sell their produces direct to the export company. Traders provide the other three export market channels. As the cluster analysis results showed, these are Exporter agents one (EA_1); these are traders who buy their produces from farmers and sell direct to the export company i.e. Serengeti fresh Company which exports FFV to UK and other European countries.

The third channel is Exporter agents two (EA_2); these traders sell their produces to either export company or other traders from Kenya. The fourth export channel is the Exporter

agents three (EA_3); these are traders who purchase their produces and sell to other traders from Kenya. Therefore, FFV export market channels are vertically coordinated, since; few actors are involved along those channels which make the profits margin accrued by channel actors along each channel to be small. Consequently, farmers selling to export market accrue more profits than farmers selling to domestic market. (Fig. 3)

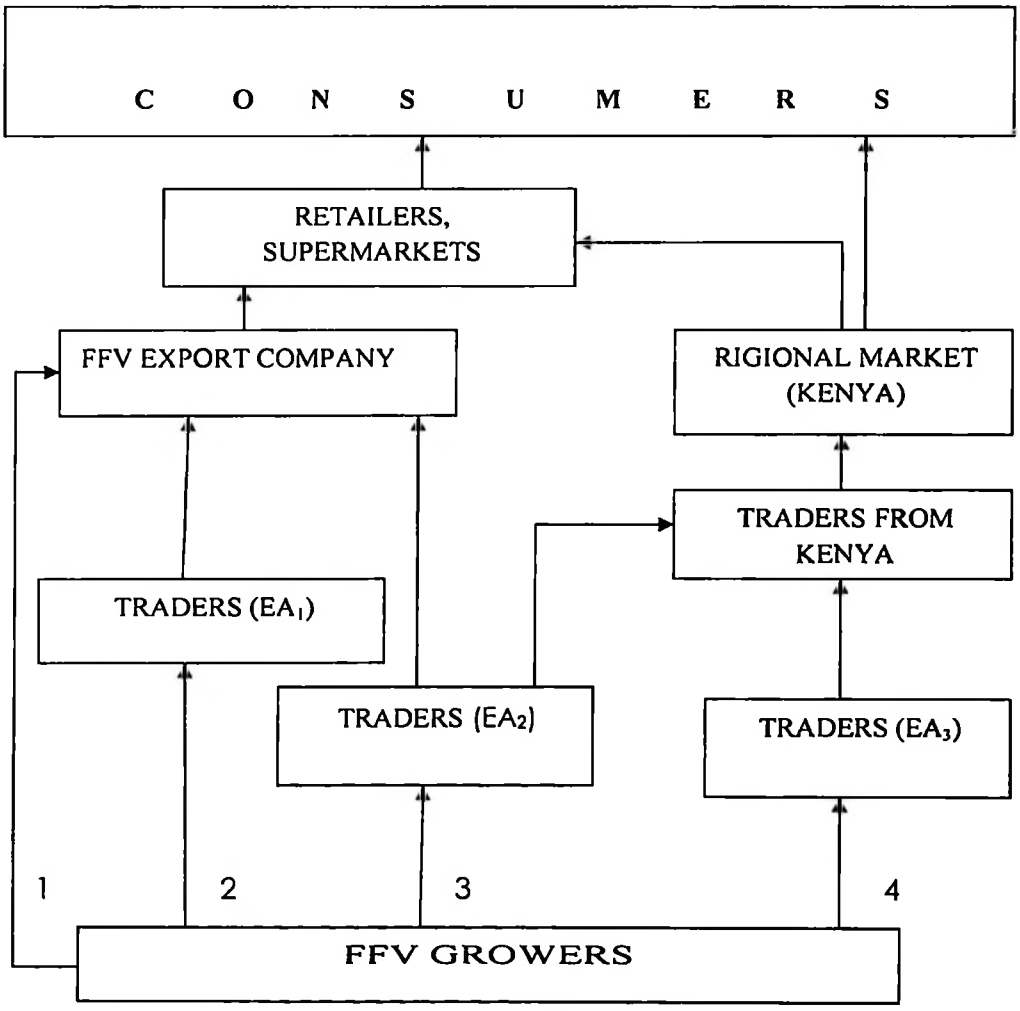


Figure 3: FFV Export marketing channels

4.7 Profitability Analysis of FFV

Gross margin analysis was done to test the hypothesis (ii) that "Selling fresh fruit and vegetable to export market is not profitable to small-scale farmers than selling to domestic market". Consequently, a t-test was used to test if there is significant difference in GM/acre obtained by different functional segments of FFV traders. These were done between small-scale farmers selling their FFV to the export market and those who are selling to domestic market., Also traders selling directly to export company and those selling to other middlemen.

4. 7.1 Profitability of selling FFV to domestic market and export market

A t- statistics under the assumption of unequal variances has a value of -3.6331 with associated ($P<0.05$, 0.003). Therefore, the hypothesis that "Selling fresh fruit and vegetable to export market is not profitable to small-scale farmers than selling to domestic market", and assuming that there is not significant difference in GM/acre obtained by small-scale farmers selling to export market and those selling to domestic market is very small. The hypothesis is refuted, and concluded that the GM/acre between farmers selling to export market and domestic market is different along the marketing channel.

For that case, small-scale farmers selling their FFV to the export market accrue more profits than those selling to domestic market, with a mean difference of about 543 642 shilling. This is due to high and stable price set between farmers and Export Company despite stringent conditions required by the exporters (Table 14).

Table 14: T-test of selling FFV to domestic market and export market

	GM/acre Domestic market	*GM/acre Export market*
Mean	800071.4286	1343714.286
Variance	19093763736	3.00912E+11
Mean different	543642.8571	
N	14	14
df	13	
t Stat	-3.633130794	
P(T<=t)	0.003033521	Sig.(2-tailed)
t Critical	2.160368652	

4. 7.2 Profitability of selling FFV directly to export Company or middlemen

Results showed that (P>0.05) meaning that the two groups' variances are equal. The t-statistics under the assumption of equal variance has a value of 1.803 and degree of freedom has a value of 23, with associated significance level of 0.0844. Therefore, the probability that there is no significant difference in GM/acre obtained by small-scale farmers selling FFV directly to the Export Company and those selling to middlemen is very large. Consequently, GM/acre between selling directly to Export Company and to middlemen does not differ along the export market chain. This may be aggravated by farmers not meeting the standards required. Hence, high rejection of the produces sold to the Export Company, which in turn reduces profits gained in comparison to low rejection rate of produces for those selling to middlemen (Table15).

Table 15: T-test of selling FFV to export company or middlemen

	GM/acre direct to Export Company.	GM/acre to middlemen
Mean	1256895.833	1071708.333
Variance	1.55711E+11	1.42035E+11
N	24	24
df	23	
t Stat	1.803541098	
P(T<=t)	0.084419517	Sig. (2-tailed)
t Critical	2.068657599	

4.8 Factors for Choice of Export Marketing Channels

Logistic regression analysis was carried out to test the hypothesis that ": Price, mode of payment, quantity supplied and rejection rate are not factors determining the choice of a market channel". Therefore, if (P<0.05) would lead to acceptance the hypothesis.

4. 8.1 Channel choice for particular farmer

Logistic regression model result, showed that possession of storage facilities, farmers heard about GlobalGap protocol, record keeping, years a farmer has been producing FFV, total land size and land as property had (P< 0.05), indicating that these variables have significant contribution to the choice of the export marketing channel to farmers. Farmers who sell their FFV directly to an exporter receive a significant higher price than farmers who do not. The average amount produced is also significantly higher. Exporters provide more often inputs to their farmers than middlemen do. They have also significantly more often a verbal or oral agreement with their farmers with regard to the quantity the farmers should deliver, the price they are willing to pay, the quality the farmers should deliver and the amount and types of pesticides farmers are allowed to use. Farmers who supply an exporter are more often able to negotiate about the price. They also receive their revenue more often on the day the buyer promised them. On the other

hand, they receive their payment usually not in cash on the delivering day. Finally farmers who supply an exporter regardless of their education level (P<0.05) are significantly more informed about international market requirements and do more often keep records of the amount and types of chemicals used (Table 16).

Table 16: Channel choice for a particular farmer

Factors governing choice of the channel	B	S.E.	Wald	df	Sig.
Having storage facilities	-0.352	0.946	0.139	1	0.007
Farmers heard about GlobalGap	0.434	0.741	0.343	1	0.000
Record keeping	0.462	0.775	0.356	1	0.001
Education level	1.932	0.830	5.421	1	0.020
Years a farmer has been producing FFV	-0.073	0.049	2.213	1	0.007
Land as property of the farmer	-1.095	0.753	2.116	1	0.146
Total land size	-0.224	0.252	0.786	1	0.375
Constant	-2.194	1.818	1.455	1	0.000

R-Square 0.673

4.8.2 Price implication for choice of a market channel

Linear regression model was carried out to examine the determinants that influence the choice of buyers concerning farmers they prefer as their suppliers. One of the most important determinants is the significant difference in the price the farmers receive for their produce. However, model results, showed significance to the variable influencing price (p<0.05) Table 17.

Table 17: Implications of the price on the choice of an export marketing channel

Source of variance	Sum of Squares	df	Mean Square	F	Sig.
Regression	258528.417	8	32316.052	3.024	0.007
Residual	544964.916	51	10685.587		
Total	**803493.333**	**59**			
R-Square	**0.567**				

Furthermore, results for the variable influencing price show that, years a farmer has been engaging in production of fruit and vegetable had contribution on the price received by farmers. Meaning that, farmers who have been producing FFV for many years are more experienced in almost of the requirements to a particular market channel.

For the case of type of buyers, farmers who sell their fresh fruit and vegetable directly to an exporter receive a significant higher price than farmers who do not. The model also indicates that being informed about new rules and regulations concerning GlobalGap requirements has a positive influence on being chosen by an exporter hence fetch high price.

One requirement of the GlobalGap protocol is that growers keep records of the types and quantities of chemicals they use. Producers supplying export marketing channels therefore, need to fulfill these rules. Therefore the fact whether a farmer keeps records has a positive influence on the choice of the exporter for such a farmer. Finally, farmers who adhere to those regulations, produce good quality produces which in-turn reduces the rejection rate of the consignments supplied. Implying that rejection rate has a negative implication to the choice of the market channel, the higher the rejection rate the lower the possibility of a farmers choosing such a particular channel (Table 18).

Table 18: Factors influencing price as a choice of an export marketing channel

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	371.780	37.119		10.016	.000
Years of export of fresh fruits or vegetables	5.192	7.922	0.097	0.655	0.015
Rejected produces (rates %)	-18.593	13.693	-0.178	-1.358	0.080
selling to specific costumers	29.612	41.554	0.128	0.713	0.479
Buyers of FFV (Middlemen, Exporters)	2.791	33.999	0.012	0.082	0.005
Having contract farming	89.910	40.287	0.374	2.232	0.003
Heard information about GlobalGap	23.076	36.855	0.094	0.626	0.001
Records keeping of fertilizer and pesticides	38.476	37.725	0.144	-1.020	0.000
Possession of storage facilities	15.282	35.544	0.062	0.430	0.007

4.8.3 Implications of quality on choice of a marketing channel

Results on regression analysis show that the model was significant as indicated by the significant F-value 2.543 with ($p<0.05$). Moreover, adjusted R^2- value of 0.817 indicates that the model explained about 81.7% of the variation on the odd ratios. The higher the R^2 value suggests that the model fitted well of the data (Table 19).

Table 19: Factors influencing quality

Variables influencing quality	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.734	0.505		3.432	0.001
Years of production of fresh fruits or vegetables	0.008	0.019	0.056	0.434	0.667
Buyers (Exporter or Middlemen)	0.631	0.299	-0.283	-2.110	0.040
Heard information about GlobalGap	1.053	0.364	0.447	2.891	0.006
Records keeping on fertilizer and pesticides	-0.614	0.373	-0.240	-1.645	0.001
Selling to specific buyer	0.264	0.419	0.119	0.631	0.031
Receiving input from buyer	-0.816	0.336	-0.342	-2.429	0.019
Possession of storage facilities	-0.785	0.412	-0.333	-1.902	0.043
Education level of respondent	0.027	0.174	0.026	0.156	0.006
Having contract farming	0.728	0.381	0.316	1.912	0.022
Adjusted R^2= 0.81					
F-value 2.543 Sig. 0.007					

These results indicate that number of years a grower has been farming have a negative influence on the rejection rate. The more years of experience a farmer has, the lower the rejection rate, in other words, the higher the presented quality. The experience also involves that a farmer knows better what quality his buyer wants. This brings about the fact that the farmer will only offer the produce that comes close to the requirements of the buyer. Therefore this outcome could mean two things: the farmer has learned from past experience and produces a better quality or the farmer adapts the offered produce better to the wishes of his buyer.

During times of oversupply, buyers often do not buy the total quantity a farmer has harvested. They have their limits and place the loss on the farmers. They grade strictly and accept only the highest quality, while during times of shortage they are satisfied with

almost everything they receive. The fact that a buyer has a more or less constant market will reflect in a lower rejection rate. This could mean that the quality produced is higher or that the buyer has a more or less stable market.

The buyer of the produce has a significant positive influence on the rejection rate. Farmers who supply an exporter directly face a higher rejection rate than farmers who do not, or in other words, exporters are stricter in the grading process. The last significant variable is whether the farmer has storage facilities. This variable has a negative influence on the rejection rate, or, in other words, a positive influence on the offered quality. Farmers who do have storage facilities are better able to maintain the quality. This is according to the theory, which states that storage facilities have a positive influence on the shelf life of fresh produce.

4.9 Challenges Faced by FFV Export Marketing Agents

The logistic regression model, results indicated the significant F-value 2.431 with ($p<0.05$). This led to the rejection of the hypothesis iv. Concluding that "quality characteristics specifically; storage facilities, record keeping, input delivery by buyers and GlobalGap protocol, and contractual arrangements are major challenges facing marketing agents within the FFV export marketing channels". Moreover, adjusted R^2-value of 0.536 indicates that the model explained about 53.6% of the variation on the odd ratios. This R^2 value suggests that the model fitted well to the data (Table 20).

Table 20: FFV export market requirements

Quality and contract arrangements	B	S.E.	Wald	df	Sig.
Constant	0.327	4.514	0.005	1	0.002
Farmers heard about GlobalGap	0.824	0.947	0.757	1	0.000
Record Keeping	1.201	0.956	1.58	1	0.019
Having contract farming	0.477	1.735	0.075	1	0.004
Contract enforcement	-0.211	1.278	0.027	1	0.069
Type of inputs received	-0.088	0.297	0.087	1	0.008
Inputs delivery by buyers	2.116	1.457	2.11	1	0.146
Adjusted R-Square = 0.536					
F-value **2.431**	**Sig. 0.003**				

Furthermore, results show that, farmers of FFV who were informed about GlobalGap protocol had positive relationship with access to Export market. That means these farmers produce and sell FFV which are in good quality as required by their customers. Further, results indicated that having contract farming had high chance of accessing the export market. However, results on Table 12 indicated that about 36.7% of the small-scale farmers had contract farming with buyers of their produces. Furthermore, 63.3% had no contract farming, which make them to have a small chance of accessing the export market. This is due to the fact that buyers are not sure of produces to have the required standards.

Moreover, farmers receiving input from buyers indicated positive relationship for farmers selling to export market; this is aggravated by the fact that inputs such as quality seeds, fertilizers and Pesticides have high costs of which most small-scale farmers can not afford. Therefore, farmers receiving inputs from buyers, produces quality crops and the buyers visit farmers regularly for consultation on how to take care of crops.

Record keeping had a positive implication for FFV actors to access export market. With reference to traceability, record keeping for FFV actors is very vital, simply because export traders would like to know the type of inputs used in production of a particular crop especially on the rate of pesticides and fertilizer application. Also the safety period when they were applied so as not to have residues on the produces which is hazardous to consumers.

Finally, quality characteristics such storage facilities, record keeping, input delivery by buyers and GlobalGap protocol, and contractual arrangements proved to be major challenges facing marketing agents within the FFV export marketing channels. Since for one to be competitive in the export market for FFV have to adhere to these aspects (Table 20).

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Overview

The major objective of this study was to investigate the profitability and co-ordination of fresh fruit and vegetable export marketing channels by small-scale farmers in Tanzania. Specifically the study aimed at (i) To describe Tanzania's fresh fruit and vegetable export marketing channels; (ii) To carry out profitability analysis of the export of fresh fruit and vegetable by small-scale farmers; (iii) To determine factors governing small-scale farmers' choice of an export marketing channel, and (iv) To identify challenges facing marketing agents within the fresh fruit and vegetable export market channels.. This chapter presents summary of the major results, conclusions, and recommendations emanating from the major findings of the study and the subsequent discussion.

5.2 Summary of the Major Results

The study found that there are four export marketing channels of fresh fruits and vegetables in the study area. These channels are farmers selling their produces directly to the export company i.e. Serengeti Fresh Ltd. Other three channels emanate from farmers selling to traders. Cluster analysis results segmented traders into three channels; EA1, EA_2 and EA_3 i.e. Exporter agents 1, 2, and 3 respectively. These export marketing channels may be found at any other part of Tanzania. Gross margin analysis also found that farmers selling FFV export marketing channels accrue more profit than farmers selling to domestic market, with a mean GM difference of Tsh. 543 642 per acre.

Moreover, price offered by buyers, mode of payment and rejection rate were found to be factors governing choice of a particular market channels by small-scale farmers and other FFV traders. High and stable prices offered by Export Company and other exporter

agents attracted some farmers and FFV traders to choose such channel. Farmers would prefer a channel which its mode of payment is in cash rather than credit simply because; farmers need money for their daily activity. Finally, for buyers who had stringent requirement on quality standards which led to high rejection rate led to FFV business actors to avoidance such channel.

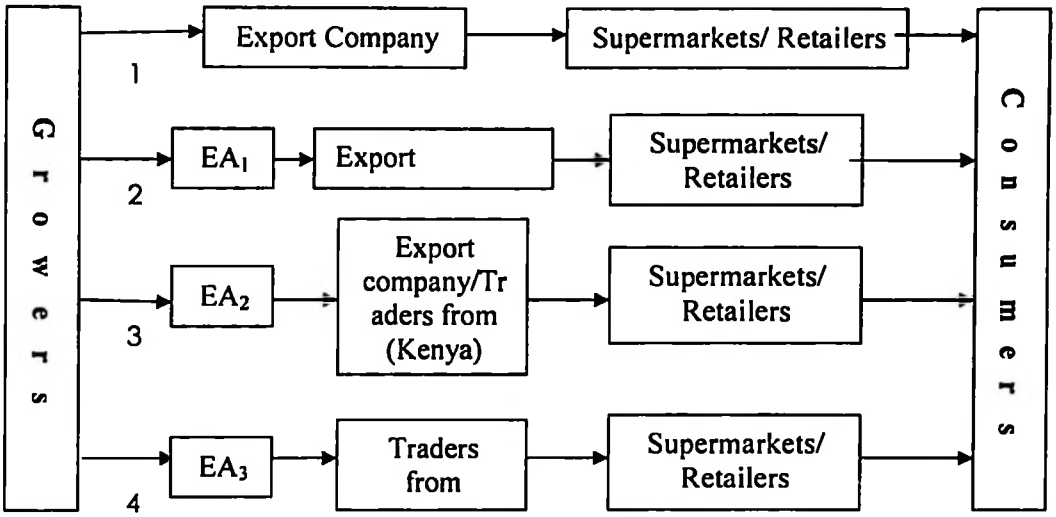
Finally, quality characteristics, specifically; storage facilities, record keeping, input delivery by buyers and GlobalGap protocol and contractual arrangements were found to be major challenges facing market agents within the FFV export marketing channels.

5.3 Conclusion

The conclusion made is based on the deduced export marketing channels of FFV, GM obtained from farmers selling their produces to export market and domestic market of FFV enterprises, factors determining the choice of the export marketing channels and challenges facing FFV export marketing agents.

5.3.1 Deduced export marketing channels

This study found four existing export market channels for FFV in the study area; these channels may be described as shown below:



Where: EA_1, EA_2 and EA_3 are exporter agents classified based on cluster analysis using factors related to GlobalGap requirements. Which were; whether the trader has heard from the GlobalGap protocol; whether the trader has storage facilities; whether the farmers the trader buys from have storage facilities; whether the farmers the trader buys from keep records; whether the trader is able to trace the produce. This result highlights FFV export marketing channels not only on the study area but also other parts of Tanzania.

5.3.2 Profitability of FFV enterprises

The critical query of 'who makes the higher profit in the FFV enterprises has been raised many times. The estimation was made between farmers selling to export market and those selling to domestic market. Using GM/acre it revealed that export market is relatively profitable; this is due to the fact that Exporters pay a significantly higher average price per year than local trader who sell produces to domestic market.

The GM per acre for farmers selling to export market is greater by a mean deference of Tsh. 543 642 per acre relative to domestic market. GM analysis was a necessary condition to assess the relative importance of different segments of the channels, which in turn would allow an appropriate use of time and resources of FFV traders for profit maximization.

5.3.3 Factors governing choice of FFV marketing channels

Farmers can choose to sell their FFV to export company directly or to a middleman. Price, mode of payment and rejection rate were hypothesized as factors influencing choice of particular marketing channels. Results showed that price has significant influence on the choice of a market channel. However, this factor is influenced by the quality of FFV farmers produce, which in turn depends on the number of years they are farming and whether they have storage facilities. Farmers who have an up to date knowledge concerning GlobalGap requirements, do keep records for FFV production have a higher chance to receive an agreement on prices. Furthermore it depends on the stability of the market of their buyers. Thus, the stable the market the stable the price received by farmers hence the choice of the channel.

Mode of payment, whether on credit or on cash and whether the farmer is paid on time as promised showed to have influence of the choice of the channel. Farmers who supply an exporter directly face a higher chance to be paid on time. Therefore farmers preferred channels where they were paid on cash or if it was on credit bases, they will choice a buyer who pays on the promised date.

Furthermore, rejection rate of consignment proved to have impact on the choice of the marketing channels by farmers; Exporters do reject a significant higher percentage of the

harvest than middlemen do. The higher the rejection rate, or in other words the lower the quality, the lower the chance that a buyer will collect the total amount hence avoidance of such channels by FFV actors.

5.3.4 Challenges facing FFV Export marketing agents

The FFV export marketing agents are faced with many challenges; however, results showed that for someone to access the export market has to adhere to record keeping of the pesticides and fertilizers used during the production of crops.

Furthermore, about 63.3% of FFV export marketing actors had no contracts; consequently, it was difficult for them to access export market for their produces. Moreover, in order to produce quality produces farmers have to use quality seeds and other inputs such as fertilizers and pesticides. These are costly, as a result most farmers can not afford since many small-scale farmers and private traders do not possess enough working capital to run their enterprises. Therefore farmers who are receiving inputs from buyers, on the other hand buyers who were able to provide inputs to farmers were able to get good quality produces hence sell to the export market.

Finally, FFV business actors who were well informed about GlobaLGap requirement had a high chance of selling to the export market. Since farmers were receiving market information from buyers of their produces, this means only farmers who were selling their produces direct to Export Company or exporter agents had information on the export market requirements.

5.4 Recommendations

It is evident from this study that there is no straightforward or single recommendation that will make FFV export enterprise work competently. However, there are numerous inter-linking strategies at the government, private companies and individual level, which if implemented effectively and efficiently could make considerable impact in making FFV sub-sector more profitable to small-scale farmers. However, the study has highlighted some very imperative clues which are worth noting;

(i) If small-scale farmers of FFV want to stay in export trade, some things have to be improved. However, if farmers cannot adjust to new rules and regulations from the importing countries, they will be out of business. These envisage recommendations given below to help farmers to stay competitive.

(a) Farmers will be better of when they sell to an exporter directly. Although middlemen might offer higher prices during times of shortage of supply, still selling to an exporter directly seems to be more profitable.

(b) To produce the right varieties, small-scales need to have access to market information about requirements for the international market. Most of the interviewed farmers received market information from their buyers. It is recommended that a group of extension workers be trained to deal specifically with horticultural export crops. They should also teach the farmers to practice some kind of market oriented production planning. Farmers should be advised about planting and harvesting dates, based on seasonal price developments per commodity. GlobalGap requirements should also be made known, so that farmers could adjust and do not risk being circumvented.

(c)The bargaining power of FFV farmers towards middlemen and exporters depends not only on supply and demand conditions, but also on knowledge among the farmers about these conditions. Also about 75% of interviewed farmers received

their price information from their buyers. Extension workers should sensitize the farmers to the price broadcasts on the radio, Television, Internet and other sources. A daily routine would be the best, as prices of fruit and vegetable fluctuate considerably from one day to another.

(d)Middlemen play a crucial role at present when it comes to marketing FFV produces and most farmers cannot do without them. However, if farmers organized themselves into farmer groups or cooperatives and go into trade themselves, they would receive the trade profits which are now being made by the middlemen. Associations such as TAHA and HODECT should help small-scale farmers to form FFV farmer's organizations and cooperatives that would empower small-scale and enable them to access potential export markets of FFV. The newly formed organizations and cooperatives should strive to lay down strategies to reach the small-scale farmers and traders to assist them in ameliorating their constraints.

(ii) Farmers often lack credits to buy high quality seed, pesticides and fertilizers. Therefore government and other financial institutions could fulfill this role. By providing credits to FFV growers, so that they can produce good quality produces and remains competitive to the export market.

5.5 Limitations of the Data and Implications for Further Research

Limitations of the study emanated from area of data availability and inadequate reference materials. Each component is discussed further below:-

(i) Data availability

Profitability of FFV export market could be well evaluated where enough data are available. Moreover, most data were collected from small-scale farmers who do not keep records thus their responses depended on their memories of respective issues. Such data

can hardly be fully reliable. Furthermore, only Serengeti fresh Export Company is operating in the study area and it was not in the position to give information, especially on prices given abroad. Therefore no enough information was collected from export companies. Hence it was not possible to determine the effectiveness of some key information such as GM between the Farmers and the Exporters. It is basically not appropriate to use the findings to conclude about profitability of the FFV export market sub-sector.

(ii) Inadequate reference materials

FFV export marketing trade has not been operated effectively in Tanzania. Therefore, it was thus very difficult to access relevant materials pertaining to the theme of the study.

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APPENDICES

APPENDIX 1: Lists of vegetables grown in the Northern Highlands of Tanzania

English Name	*Kiswahili Name*
African eggplant	Ngogwe
Amaranths	Muchicha
Baby Carrots	Karoti changa
Baby Corn	Mahindi change
Beans (Dry)	Maharagwe
Beet Roots	Viazi damu
Bell Pepper	Pilipili hoho
Black nightshade	mnavu
Broccoli	Brokoli
Brussel Sprout	
Cabbages	Kabeji
Cachucha Pepper	Pilipili mbuzi
Carrots	Karoti
Cauliflower	Kobi maua
Celery	Selari
Chinese Cabbage	Chinese
Collards	Sukuma wiki
Corn	Mahindi
Cucumber	Matango
Eggplant	Biringanya
French Green Beans	Uwalu/green beani/ngeleshi
Garden Peas	Njegere
Green Beans	Maharage machanga
Hot Pepper	Pilipili kali
Leeks	Kitunguu/liki
Lettuce	Saladi/ Lettuci
Okra	Bamia
Onion	Kitunguu
Parsley	Paseli
Patti Pan Squashes	Maboga
Pigeon Peas	Mbaazi
Potatoes (Irish)	Viazi mviringo
Red Cabbages	Kabeji nyekundu
Snow Peas	Njegere
Squash	Maboga
Sugar Snaps Peas	Njegere
Sweet pepper	Pilipili tamu
Sweet Potatoes	Viazi vitamu
Tomatoes	Nyanya
Turnips	Baling
Zucchini/baby Marrow	mamunya

Source: Research Protocols-Tanzania country study 2006.

APPENDIX 2: Lists of fruits grown in the Northern Highlands of Tanzania

English Name	*Kiswahili Name*
Avocadoes	
Banana	Ndizi
Mangoes	Maembe
Oranges	Machungwa
pawpaw	Papai
Peaches	
Pears	
Plums	
Tangerines	Chenza

Source: Research Protocols-Tanzania country study 2006

APPENDIX 3: Questionnaire for FFV farmers

Questionnaire No.....Date of interview.....

Interviewer name.....
Name of respondent.....
Ward.....Village.....

Farmer characteristics

1. Age of the farmer.....years
2. Gender of respondent
   1. Male 2. Female ☐
3. Marital status
   1. Married 2. Single 3. Widowed 4. Divorced ☐
   5. Others (specify).....
4. Education level of respondent
   1. No formal education 2. Primary education 3. Secondary education and above
   4. Post secondary education (specify.....) ☐
5. Do you produce/trade/export fresh fruits and vegetables?
   1. Yes 2. No ☐
   If not for export why(explain).
   .....
6. For how long have you been producing fruits and vegetables.....years.
7. If producing for export market for how long s/he has been exporting.....years
8. House hold size (number).....
9. In the table below give the breakdown of the household composition

Gender 1= Male 2=Female	Age	Relation 1=Self 2=Wife 3=child 4 Relative	Participation in farming activities 1=Yes 2= No
Total			

10. Main sources of income (more then one answer is possible)
    1. Sales of fresh fruits and vegetables crops.
    2. sales of livestock and its products ☐
    3. Wage/ salary employment
    4. off farm activities (not wage employment)
    5. Others (specify).....

Fresh fruits / vegetables crops production and marketing

11. Do you possess land? 1 =Yes 2= No ☐
12. Do you hire land? 1= Yes2=No
13. If hired, how much does it cost/ acres.....Tshs
14. How big is your hired/land.....acres

15. In how many plots is your land divided? .....
16. How much of the total land was cultivated during the last season for vegetables.....acres, for fruits.....acres
17. How many types of vegetables do you grow/trade/export?.....Total
18. Mention them

.....

19. How many types of fruits do you grow/trade/export?.....Total
20. Mention them

.....

21. Do you possess the following equipments?

Item type	Hoes	Panga	Axes	Sprayers	Ox-plough	Tractor	bicycle	Pick up truck	TV	Radio
1= Yes 2= No										

22. Indicate the labour involved in the following farm operations for horticultural crop cultivation:

Operation	Family labour					Hired labour					
	Hrs/day	No. of people			No. of days	Hrs/day	No. of people			No. of days	Pay/L day (Tshs)
		M	F	C			M	F	C		
Land clearing											
Cultivation											
Harrowing											
Ridging											
Irrigation											
Transplanting/sowing											
Weeding											
Fertilizer application											
Pest control											
Harvesting											
Haulage											
packaging											
Others(specify)											

23. If in contract bases, how much is /acres

Operation	Contracted labour					
	Area(acres)	No. of people			No. of days	Pay in Tshs/acres
		Male	Female	Children		
Land clearing						
Cultivation						
Harrowing						
Ridging						
Irrigation						
Transplanting/sowing						
Weeding						
Fertilizer application						
Pest control						
Harvesting						
Haulage						
packaging						
Others (specify)						

24. If you used tractor for farming, how much were you charged per hectare?
(i) Cultivation.....TShs (ii) Harrowing.....TShs
(iii) Ridging.....Tshs

25. Give information on the other inputs used in the farming process.

Input type	types	Quantity (Kgs)		Price/ unit		Source 1= own 2= traders 3= coop. 4=Export comp	
		Fruit.	Veget.	Fruit.	Veget.	Fruit	vegetable
Seed							
Fertilizer							
Pesticide							
Herbicides							
sacks							

packages							
Others(specify)							

Harvesting and post harvest handling

26. State the planting and harvesting months of fruits/vegetables and others crops

Crop	Planting	Harvesting
Fruits		
Vegetables		

27. Do you have storage facilities for fresh fruits and vegetables produces?
    1= Yes 2 No ☐
28. If yes, what are these storage facilities?
    1= Refrigerated facilities 2= Tenga 3= Wooden Crates
    4= Sacks 5= Others (Specify) ☐
29. If no, why?
    .....
    .....
30. What are criteria used in sorting and grading fresh fruits and vegetables
    .....
    .....
31. What do you do to assure that the quality of fruits and vegetables produces is maintained?
    .....
    .....

Production and trading pattern

32. Do you usually sell to specific customers?
    1= Yes 2= No ☐
33. If yes what is the relationship between you and him/her
    1= My relative 2= My friend ☐
    3= Officemate 4= Others (specify).....
34. If no, where do you sell your fruits/ Vegetables?
    .....
    .....
35. How do you transport your produces to the selling point?
    1= Bicycles 2=Ox-cart 3=Own Lorry 4=Hired Lorry
    5=Bus 6= Others(specify).....
36. Why do you usual sell to him/her?
    1= credit advancement 2= trustful person ☐
    3= always pay in cash 4= others (specify)
37. Do you have any contractual arrangement with buyers/sellers of fruits and vegetables?

1= Yes 2= No ☐

38. If yes, fill in the following table in terms of condition of sales

Crop	Amount sold	Term of payment 1= on cash 2= on credit 3=others(specify)	How contract is enforced 1= law 2=trustfulness 3=others(specify)	Transaction Cost

39. Do you supply fruits/vegetables produce throughout the year?

1= Yes 2= No ☐

40. If no, which months in a year you usually supply to your customer(s)

.....

41. How do you ensure constant supply of fruits and vegetables produces?

1= Irrigation 2= Buy form others ☐

3= Practicing relay planting 4= others (specify)

42. How do you collect information on market prices?

1= Direct visit to the market place 2= From traders/exporters

3= From friends and relatives 4= Radio broadcasting

5= Internet 6=Television

7=others (specify).....

43. What type of market information do you get?

1=Price of the produce 2=Price of input

3=Quality and standards of the produce 4= Export markets

5= Others (specify).....

44. Do you incur any costs in acquiring that information?

1=Yes 2= No

45. If yes, how much.....TShs

46. What strategies do you set so as to have this information on time?

.....

.....

Globalgap requirements

47. Have you heard from the Good Agricultural Practice Protocol that the Supermarkets in Europe have set up?

☐ Yes ☐ No

48. Do you keep records of the amount of pesticides and fertilisers that you use?

☐ Yes ☐ No

49. If yes, for how long do you save these records?

50 . What types of fertiliser do you use?

51. How many fertiliser of each type do you use per kg of seed?

52. What types of pesticides do you use?

53. How many pesticides of each type do you use per kg of seed?

54. What types of fungicides do you use?

55. How many fungicides of each type do you use per kg of seed?

56. Where does the water come from that you use for irrigation?

☐ From the river ☐ From the dam ☐ From any other source, namely

57. Please let me know the amount of Produces sold the last season/year from each of the following horticultural crops.

H.Crops	Area	Kg	consumption	deteriorated	sold	prices	Total
Tomato							
Cabbage							
Irish potato							
Pears							
Beans							
Cauliflowers							
Broccoli							
Sweet Paper							
Squash (Zuchini)							
Lettuce							
Baby malow							
Leeks							
Onion							
Chinese Cabbage							
Peaches							
Apples							
Avocados							
Banana							

Note: Make sure you record the unit of measurement.....

Value chain actor's relationships

58. Do you have extension agent in your area?

59. Do you get any advice from the extension agent on proper production and marketing practices?

1= Yes 2= No ☐

60. What types of advice do you get from the extension agency?

.....

61. Who set the price for horticultural produces?

1= Farmers 2= Assemblers

3= Wholesalers 4= Retailers ☐

3= exporters 5= Others (specify).....

62. What criteria do you use in setting the price?

1= Cost incurred
2= Supply and Demand situation ☐
3= Others (specify).....

63. Do you give discount to those who buy in bulk?
1= Yes2= No ☐

64. If yes, fill in the following table

Type of Produces	Quantity sold	Discount given	Type of Market 1= consumer 2= retailer 3=wholesaler 4=Exporters 5= others(specify9

65. Do you have any farmers group?
1= Yes2 No

66. If yes, what is the name of your farmers group.....

67. What is the activities of you farmers group?
.....
.....

68. Do you usually bulk your produces and sell to customers as farmers group
1= Yes2= No

69. What are other advantages of joining to a farmers group?
.....
.....

70. Where do you experience problems most in your agricultural business?
1=Production 2=Marketing
(i) Fresh fruits/vegetables..... ☐ (ii) Other crops.....

71. If on marketing of fresh fruits and vegetables what are those problems?
.....
.....

72. What do you suggest to be done in order to lessen the situation?
.....
.....

73. What is your future prospect on regarding to marketing of fresh fruits and vegetables?
.....
.....

Thanks for your cooperation and stay blessed

APPENDIX 4: Questionnaire for middlemen/traders

Questionnaire No.....Date of interview.....

Interviewer name.....

General information

1. Name and address of the respondent

Name of respondent.....Gender.....1. Male 2. Female

Age.....years, Ward..... ..... Village.....

2. For how many years have you been a middleman for FFV already?

3. What is your education level?

1. No education 2. Primary school not finished

3. Primary school finished 4. Secondary school not finished

5. Secondary school finished 6. University

4. Which products do you buy and sell?

1. French/green beans 2. Snow peas 3. Passion fruit

4. Cereals 5. Baby corn 6. Cabbages

7. Avocado 8. Tomato 9. Mango

10. Sugar snaps 11. Anything else, namely.....

5. What is the commission rate that you charge per kg .....

6. Fill in the table below the average amount of FFV that you buy and sell annually in kg

Crop	Quantity (Kgs)	Price //(Kgs)	Quantity rejected (Kgs)	Quantity sold (Kgs	Price (TSh/Kg)	Total (Tsh)

7. What percentage of your income does arise from FFV trade?.....%

8. Do you own any fixed assets?

1.Yes 0. No

9. If yes, which ones?

1. House 2. Cows 3. Bicycle 4. Water pump

5. Car 6. Plot 7. Any acres 8. A shop/business.....

10. What percentage of the FFV meant for export?

11. What is the main destination for export?

1. UK 2. France 3.The Netherlands 4.Germany

5. The Middle East 6. South Africa 7. Belgium 8. Unknown

9. Another country, namely.....

12. Do you hire any employees to assist you?

1. Yes 0. No

13. If yes, how many?.....

14. What percentage of the harvest do you refuse to buy from farmers because it doesn't meet the quality requirements?.....%

Input control

15. Do you provide or specify any of the following inputs that are needed to grow FFV? (Seeds, fertilizer, pesticides, labour, equipment, credit, other input)

1. Yes 0. No

16. If yes, which inputs?.....

17. Do the farmers have to pay for these inputs?

1. Yes 0. No

18. If yes, how?

1. I reduce the payment to the farmers after harvest

2. They have to pay in advance

3. Other, namely.....

Monitoring

19. Do you visit growers in the field?

1.Yes 0. No

20. If yes, on average, how many times do you or your representatives visit each grower during a typical year?

1. Once a week 2. Twice a week 3.Three times a week

4. Once every two weeks 5. Once a month 6. Other, namely.....

21. What kind of thinks do you check during such a visit?

1. I advise about chemical use 2. I advise about fertilizer use

3. I advise about irrigation 4. I advise about the planting method

5. I check how the farmer threats the FFV

Quality Measurement

22. Is any part of your growers' final payment adjusted on the basis of measured quality for FFV?

1. Yes 0. No

23. How do you measure the quality?

24. Which product attributes are important to you (for example colour, length, diameter, amount of pesticides used, amount of fertilizers used)?

25. The amount of chemicals being sprayed 2. The physical quality

26. The pest infection 4. The size of the Produce

27. The cleanliness of the produce 6. Anything else, namely.....

Exposing grower to risk

28. Does the payment you make to your growers of FFV depend explicitly on the price you receive for the sale of the product downstream?

1. Yes 0. No

Information flow

29. From whom do you get the information about prices and the required quality?

1. From the exporter 2. From a middleman

3. From someone else, namely.....

30. How do you receive the information about the prices?

1. By phone 2. By fax 3. By mail

4. The buyer visits me regularly 5. I visit the buyer regularly

6. Other, namely.....

31. Does your buyer provide seed to you?

1.Yes 0. No

32. When do you get an order from your buyer?

1.The same day as that he needs the produce 2.One day before

3.Three days before 4.A week before

5.Other, namely.....

33. How do you make sure that you'll have enough FFV when the exporter needs them very urgently?

1. By visiting farmers who usually do not supply me

2. By visiting other middlemen 3. I just give what I have

4. I tell my farmers to pick more 5. Anything else, namely.....

Information contracting-exporter

34. Do you sell your FFV to an exporter directly or to another middleman?

1. I sell to an exporter directly 0. I sell my to a middleman

35. If to an exporter directly, to which one(s)?

1. Gomba Estate Ltd 2. Serengeti Fresh Company
3. East African Seed Company 4. Multi-flower Company
5. Alfa Company 6. Kenya Horticultural Exporters
7. Kibo Ltd Company 8.Others namely.....

36. Do you have one buyer for your FFV every year or do you have several buyers?

1. I have one buyer 2. I have two buyers
3. I have several buyers (>2)

37. If one buyer, for how many years have you been selling your FFV to this buyer?

38. If several buyers, do you sell to them every year or do you have other buyers every year?

1. The buyers differ every year 2. I have the same buyers for 1 year
3. I have the same buyers for 2 years 4. I have the same buyers for 3 years
5. I have the same buyers for more 3 years

39. Are you able to choose between more than one potential buyer or is there just one person you could sell your FFV to?

1. I am able to choose 0. There's only one person I could sell my FFV to

40. Do you have made agreements with your buyer regarding the quantity that should be delivered?

1. Yes 0. No

41. If yes, are these agreements written down?

1. Yes 0. No

42. Do you make agreements regarding the price?

1. Yes 0. No

43. If yes, are these agreements written down?

1. Yes 0. No

44. If yes, what price do you receive?

45. Could you negotiate with your buyer?

1. Yes 0. No

46. Do you make agreements regarding the delivering date?

47. If yes, are these agreements written down?

1. Yes 0. No

48. Do you make agreements regarding the quality?

49. If yes, are these agreements written down?

1. Yes 0. No

50. Do you make agreements regarding the amount of pesticides and fertilizers used?

51. If yes, are these agreements written down?

1. Yes 0. No

52. When do you receive your money?

1. The day I deliver the FFV 2. Later

53. If later, when exactly?

1. After a day 2. After one week 3. After two weeks 4. After three weeks

5. After a month 6. After a season 7. Differs with the buyer

8 Other, namely.....

54. Do you always receive your money the day the buyer promised you?

1. Yes 0. No

55. Does your buyer always buys the total amount of FFV you have, or just a part?

1. Yes 0. No, he has limits during low season

Information about contracting-farmer

57. Do you have a fixed number of farmers who deliver the FFV to you after every harvest?

1. Yes 0. No

57. If yes, for how many years have you been buying from them?

58. Do you make agreements with the farmer regarding the quantity you are willing to buy from them?

1. Yes 0. No

59. If yes, are these agreements written down?

1. Yes 0. No

60. Do you make agreements regarding the price?

1. Yes 0. No

61. If yes, are these agreements written down?

1. Yes 0. No

62. Can they negotiate with you about the price?

1. Yes 0. No

63. On what factor(s) does the price you are willing to pay the farmers depend?

1. On the price I receive from my buyer 2. On the quality the farmer delivers

3. On the costs I have to make 4. Something else, namely.....

64. When do you pay the farmers?

1. When I collect the produce 2. After receiving the money from my buyer

3. After two weeks 4. After a month 5. Others, namely.....

65. Do you make agreements regarding the delivering date?

1. Yes 0. No

66. If yes, are these agreements written down?

1. Yes 0. No

67. Do you make agreements regarding the quality?

1. Yes 0. No

68. If yes, are these agreements written down?

1. Yes 0. No

69. Do you have made agreements regarding the amount of pesticides the farmers should use?

1. Yes 0. No

70. Do the farmers have storage facilities where they can store the produce?

1. Yes 0. No

71. If yes, do they have cooling facilities?

1. Yes 0. No

Shelf life of FFV

72. Do you collect the produce at the same day as the farmers harvest it?

1. Yes 0. No

73. Do you have storage facilities?

1. Yes 0. No

74. If yes, do you have cooling facilities?

1. Yes 0. No

75. Does your buyer come to you or do you bring the produce to the buyer?

1. The buyer comes to me 2. I go to see the buyer 3. This differs

GlobalGap requirements

76. Have you heard from the GlobalGap protocol?

1. Yes 0. No

77. Are you able to trace the FFV back to the farmer who grew them?

1. Yes 2. Sometimes 3. No

78. If yes, how do you do this?

1. I use stickers 2. I use tags 3. Other, namely...

79. How do you make sure the farmers do not use more pesticides than is allowed?

1. I visit the farmers regularly2. I trust the farmers I buy the produce from

3. I train the farmers I buy the produce from 4. Something else, namely.....

80. How do you make sure the farmers do not use more fertilizer than is allowed?

1. I visit the farmers regularly 2. I trust the farmers I buy the produce from

3. I train the farmers I buy the produce from 4. Something else, namely...

81. Do you know if the farmers you buy from keep records of the pesticides and fertilizers they used the last two years?

1. Yes 2. No 3. Some of them

82. If yes, for how long do they keep those records?

1. For one season 2. For a year 3. For two years

4. I do not know 5. Other, namely...

83. Where does the water come from that the farmers use for irrigation?

1. River 2 . Dam 3. Other, namely.....

Thanks for your co-operation and stay blessed