ANALYSIS OF SUPPLY CHAIN FOR GREEN BEANS IN TANZANIA: A CASE STUDY OF KILIMANJARO, ARUSHA AND DAR ES SALAAM REGIONS

BY

PASCHAL PROSCOVIA KAMUGISHA

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ABSTRACT

This study was conducted to examine supply chain of green beans in Tanzania. Data were collected from secondary and primary sources. Four farm owners from Kilimanjaro (3) and Arusha (1); and Seventeen market agents from Arusha (5), Kilimanjaro (5) and Dar es Salaam (7) regions were interviewed using a structured questionnaire. Checklists were used to interview owners of big hotels and supermarkets. Data were analyzed using descriptive statistics. Profit margins and marketing margins were estimated as indicators of performance and market efficiency respectively. The study revealed that green beans were marketed through three different channels. These are: (1) farmers ⇒exporting companies⇒ European markets⇒ consumers; (2) farmers⇒ supermarkets⇒consumers; and (3) farmers ⇒assemblers⇒ wholesalers ⇒retailers consumers. Wholesalers had relatively high market power followed by retailers, farmers, and assemblers. Farmers and exporting companies were bound by formal contracts enforced by law. Other chain actors used informal contracts whose enforcement was trustfulness. About 71% of chain actors lacked storage facilities. Majority of chain actors (86%) used open spaces to keep green beans fresh. Quality attributes mentioned by marketing agents were: freshness, immature, greenish and straight beans. Wholesalers had more access to market information than other chain actors. Green beans production and marketing faced some problems. These are diseases and expensive pesticides, water scarcity, lack of organizations among chain actors and limited access to market information. Regarding the problem of diseases and expensive pesticides, farmers/traders should be sensitized to form organizations. The organization can purchase inputs in bulky and sell them to farmers at reasonable price; and improve farmers'/ traders' negotiation power. To improve water supply, rainwater harvesting and modern technology like should be promoted. Improvement on market information system should be enhanced by promoting telecommunications infrastructure.

DECLARATION

I, **Paschal Proscovia Kamugisha**, do hereby declare to the SENATE of Sokoine University of Agriculture that this dissertation is my own original work and has not been submitted for a degree award in any other University.

Signature .....

Date 3/10/2006

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This work is dedicated to my lovely husband, Mr. Sebastian Faustin Mhanga for his encouragement and advice during the entire period of the study. You are always being loved and valued simply for being you.

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AICAD	African Institute for Capacity Development
ARSEP	Arusha Region Social Economic Profile
BCR	Benefit Cost Ratio
FAO	Food and Agriculture Organization
GCC	Global Commodity Chain
GFAR	Global Forum on Agricultural Research
GMF	George Mateljan Foundation
IDA	Iron Deficiency Anaemia
ICN	International Conference on Nutrition
ICSTM	Imperial College of Science, Technology and Medicine
IFPRI	International Food Policy Research Institute
ITF	International Trade Forum
KRSEP	Kilimanjaro Region Social Economic Profile
KNCU	Kilimanjaro Native Cooperative Union
MAFS	Ministry of Agriculture and Food Security
SDD	Sustainable Development Department
SML	Sydney Market Limited
UK	United Kingdom
VAD	Vitamin A Deficiency
WHO	World Health Organisation

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Investment in high value crops like fruits and vegetables, dairy products, poultry, and fish is gaining importance in developing countries (Mudhin, 2004). This is due to the fact that the aggregate value of the traditional crops in the world trade has been declining since 1980s (World Bank, 1994). Meanwhile, the value of high value crops like green beans escalates in the world market. Kaul (1997), when exploring organization of production, marketing and processing on the horticultural sector in India, argued that, comparison of cost benefit analysis of horticultural crops confirms to generate higher income per unit area than other crops like cereals. For example his study revealed that benefit cost ratio (BCR) of mango (non traditional crop) production was 3.39 against 1.67 for groundnuts and 1.71 for sorghum (traditional crop). Another interesting example is in the North Indian state of Himachal Pradesh, where returns from vegetable growing are quite high and could be much higher if the package of recommended practices is adopted (Kaul, 1997).

Production of green beans in small and marginal farms will not only provide gainful employment for under utilized family labor but would also reduce income disparity among farms of differing sizes (Bhati and Sigh, 1993). The short-term turn over of green beans is another advantage as it requires only 48 – 65 days to harvest different types of green beans compared to traditional cash crops like coffee which took about three to five years before harvesting. Green beans contain varieties of minerals and vitamins that play an important role in human nutrition, preventing diseases, and contributing to the nation's development and prosperity. Green beans are excellent sources of vitamin C, vitamin K and manganese. Moreover, Green beans are a very

good source of vitamin A (notably through their concentration of carotenoids including beta-carotene), dietary fiber, potassium and iron. Green beans also are a good source of magnesium, thiamin, riboflavin, copper, calcium, phosphorous, protein, omega 3 fatty acids and niacin (George Matcljan Foundation, 2005). Minerals and vitamins contents of green beans make it play vital roles in maintaining strong bones, prevention of arteriosclerosis and diabetic heart disease, lowering high blood pressure and prevention of colon cancer. Their role in combating the global problem of malnutrition is therefore obvious. According to the World Health Organization (WHO) (1992), 190 million people are at risk of vitamin A deficiency (VAD), and over 2 billion are suffering from Iron Deficiency Anemia (IDA). Children, pregnant and lactating mothers are the most vulnerable to the disorders linked to these deficiencies. The global commitment to eradicating micronutrients deficiencies, particularly VAD emerged at the International Conference on Nutrition (ICN) held in Rome in 1992 that suggested the increase of production and consumption of fruits and vegetables, green beans inclusive to improve the situation, especially for the vulnerable groups.

The history of green beans dates back to 5000 –6000 BC in Central and South America where, people grew them for domestic use. A large number of commonly used green beans grown today came from this area. Since the 16th century, green beans have been spread throughout the world (Sydney Market Limited, 2002). Green beans were brought to Australia and planted on Norfolk Island in March 1788. Due to strong salt winds, they did not perform well hence only a smaller number of varieties were sown in subsequent years. Over thousands of years, people have been growing green beans that resulted in hundreds of different varieties available today (Sydney Market Limited, 2002).

On the trail of the green beans, cultural food ways among the French and the British lead to formation of "contract" farming in the former colonies in Africa. The roles of friendship and stereotyping assured the flow of foodstuffs to European supermarkets and personal relations linking small farmers and entrepreneurs in Africa with consumers in Europe. These shopping patterns have been made anxious by fears of old and new diseases (Blair *et al.*, 2004). The procurement of produce by UK supermarkets from Africa has grown quickly over the past decade due to improvements in transport and logistics and has led to the introduction of value added products such as cuts of fruits from Kenya to UK supermarkets (Weatherspoon and Readon, 2003). It is during the last decade that the green beans were brought and grown in Tanzania for export to the European markets.

1.2 Problem statement and justification

Tanzania is endowed with favourable climatic condition for growing different types of fruits and vegetables especially in the coastal belt, the central plateau, the lake zone and the northern and southern highlands (Mbelwa, 1999). Green beans are among the vegetable crops grown. Its high value in the world market and short period of growing, make green beans farming to be a lucrative investment. This is accredited with the decline of the aggregate value of the traditional cash crops in the world market. However, the short post harvest life span of green beans put the enterprise at a great risk. It takes only seven days to rot after being harvested. Short-term post harvest lifespan and quality attributes required by consumers of green beans necessitate a systematic and coordinated chain.

Several studies have been conducted on the horticultural crops sector in Tanzania. Some of which are Mbelwa (1999) reviewing markets for horticultural crops, Nyange

et al., (2000) on the fresh fruit marketing in Tanzania: prospects for international marketing, and Ashimogo and Lazaro (1989) assessing "Vegetable Marketing in Mgeta, Morogoro District". However, these studies have concentrated on fruits and vegetables other than green beans. These include cabbages, tomatoes, oranges and pineaples. Scarce information exists regarding movement and coordination of green beans and institutions binding chain actors, hence challenges implied to small farmers to remain competitive and cope with the market forces. This study aimed at examining the supply chain of green beans in Tanzania using a case study of Kilimanjaro, Arusha and Dar es Salaam regions. Supply chain analysis calls for greater communication between the various actors along the chain, to deflect pressures within the green beans crop by highlighting the need to remain competitive with green beans production and marketing and to argue for more sustainable systems of production and support for local and international markets.

1.3 Objectives

1.3.1 General objective

The general objective of the study was to examine the structure and functioning of the supply chain of green beans in Tanzania.

1.3.2 Specific objectives

The specific objectives of the study were:

i. To examine the marketing and distribution channels of green beans as well as marketing power and relationships among marketing agents
ii. To explore how chain actors develop chain strategy in marketing green beans
iii. To identify the major business challenges facing marketing agents

iv. To suggest possible interventions for the improvement of the green beans supply chain

1.4 The conceptual framework

Agri-chains involve a number of interconnected steps. These range from the origin of farm inputs and farm technology to the final consumption. Each node of the chain is affected by private actions and institutional services, hence the performance of green beans that is measured with profit at each node of the chain.

As stated previously, the general objective of the study was to examine the structure and functioning of the supply chain of green beans in the country. To achieve this broad objective together with the specific objectives and identify variables for data collection, a conceptual framework was developed (Figure 1). Actions of private sector and institutions affect the chain activities and hence the performance of green beans market that is measured in terms of the income achieved at each node of the chain. This is done through market operations, quality attributes, cost involved and personal attributes as indicated in the conceptual framework.

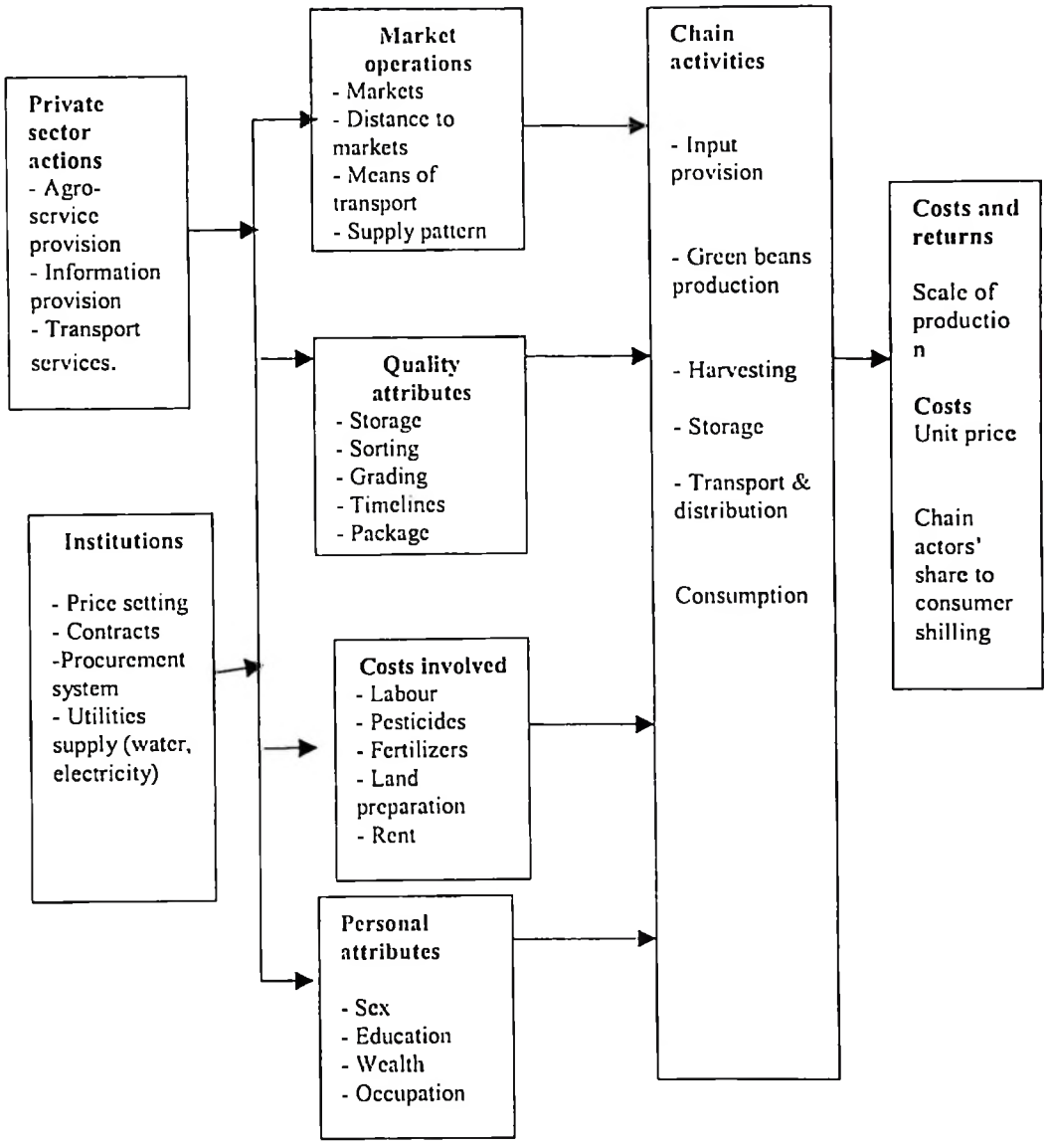

Figure 1: Conceptual framework for the study

The two pertinent actions (i.e. institutions and private sector actions) affect chain actors' attributes in a sense that nature of the business and institutions involved favour one group of people leaving others out (e.g. men Vs women, literates Vs illiterates and rich Vs poor). This is due to the nature of business environment involved, which affect

things like costs, regulations and requirements). These attributes are in terms of sex, education, wealth and occupation.

Equivalently, actions by private sector and institutions have impacts on the costs incurred on the production and marketing of green beans. For example, if the process is too bureaucratic, the costs involved in the process becomes high, and management and coordination of the chain become difficult, which lead to some unnecessary wastage and meager profit among chain actors.

Moreover, institutions (like Food Safety Requirements and Standards) and private sector actions (Companies providing agricultural inputs) affect quality attributes. This is due to the fact that things like provision of quality inputs such as seeds, fertilizers and pesticides; and storage facilities, sorting, grading and meeting timeline depends on the capability of the sector performing a task and institutions governing the process.

Private sector actions (e.g. Fair Trade promotion) and institutions (e.g. traceability of crops from shelves of supermarkets to growers' field) lead to market segmentation that is accompanied with identification of means of transport used and scale of trade. In line with this, water supply/availability regimes determine supply pattern. Economies and diseconomies of scale is gained regarding amount and sustainability of water available for irrigation. Investors with more access to water for irrigation normally have more farm size than those with less access to water for irrigation.

Then market operations, quality attributes, costs incurred and chain actors attributes do influence chain activities performed. These range from input provision and green

beans production to green beans consumption. Activities made here determine if green beans will be transported to the place of scarcity at the right time or not.

Chain activities carried out lead to the determination of scale of produce traded, chain actors' share of consumer shilling and the unit price at each node of the marketing chain. The market operations, private sector actions, public sector action like policies and regulations; and institutions affect the efficiency of the chain and hence profit margins attained.

This study focuses on the whole chain i.e. from factor input procurement, production, marketing and distribution of green beans. A unique characteristic of green beans chain is that it does not have processing point.

1.5 Structure of the report

The remainder of the report is organized in four chapters. Chapter two reviews literature on approaches of analyzing commodity supply chain, institutions facilitating efficient commodity supply chain, fruits and vegetables supply chain within the country, and marketing strategies. Chapter three presents the methodology including the description of sampling design, data collection tools analytical techniques and efficiency measures of marketing and performance. Chapter four presents the results and discussions, while chapter five presents major findings of the study and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Commodity supply chain defined

Commodity supply chain describes the connections between different enterprises involved in the design, production, and marketing of a finished product (Gereffi, *et al.*, 1994). According to Roekel *et al.*, (2000), the supply chains are industrial arrangements that allow buyers and sellers who are separated by time and space to progressively add and accumulate value as products pass from one member of the chain to the next. IFPRI (2003) defined commodity supply chain as a value addition process whereby a commodity is processed or manipulated in whatever way in an effort to add value to it as it goes along the commodity chain to the final user. ITF (2003) named the commodity chain as value chain and described it as the sector level analysis of each link in the 'chain of activity' from the time when the product or service is only an idea to the time when it is disposed off after use.

A commodity supply chain entails tactical interventions at the critical nodes of the commodity chain to develop the commodity production, services and marketing both at the same time. The commodity chain involves all the institutions that are involved in production, post harvest storage, processing, research and development and marketing of the respective high value commodities (IFPRI, 2003). A commodity chain/value chain for any product or service extends from research and development, through raw materials supply and production through delivery to international buyers, and beyond that, to disposal and recycling (ITF, 2003).

Within the global networks, commodity chain analysis is fundamentally interested in how power is expressed in the commodity chain, and where and how profits are extracted. By breaking the process of producing a commodity and bringing it into the hands of a consumer into several component parts or nodes, commodity chains permit the analysis of the social relations within each node. Commodity chain can be divided into two types, producer driven and buyer driven (Gereffi, *et al.*, 1994). Commodities requiring heavy capital and technology investments and controlled by companies with key technologies and production facilities are producer driven. On the other hand, production of buyer driven commodities are usually labour intensive and retailers and brand name companies exercise key governance functions. This study concentrated on the buyer driven chain in the competitive world of green beans market.

2.2 Approaches used in analyzing commodity chain

The commodity chain concept has a relatively long history and has been used in relation to a wide range of industries and commodities (Dicken, 1998). Taking a longer historical perspective suggests that the current usage of the commodity chain idea in agro-food studies, and in economic geography more widely, can instead be traced back to two sources in the 1970s. The *first* is Wallerstein's (1974) world systems theory, further developed by Hopkins and Wallerstein (1986). Here a commodity chain is understood as "a network of labour and production processes whose end result is a finished commodity" (1986, p. 159). In 1994, Hopkins and Wallerstein set out their research agenda as being: "To depict the changes in the form of the commodity chains and to see whether and to what extent the structures of [specific component production processes] change in accordance with the cyclical rhythms of the world-economy" (Hopkins and Wallerstein, 1994). Thus this

perspective is set within a tradition of seeing economic development and international economic change as influenced by the expansion and contraction of 70-year Kondratieff Cycles in the series of *Studies in the Political Economy of the World System*, for which Wallestein was series advisor, helped establish global commodity chain (GCC) analysis as a relatively coherent paradigm (Gereffi and Korzeniewicz, 1994).

A *second* source for the commodity chains idea can be traced back to some of the earliest work in the 1970s on the 'new political economy' of food and agriculture, including Friedland *et. al.*, (1981) landmark study of capital, labour and technology in the US lettuce industry: *Manufacturing green gold.* Friedland's work was aimed at two main fields of inquiry: the sociology of agriculture and the comparative analysis of production systems. It set out to build an explanatory model of technological change in agriculture, examining the exploitation of agricultural workers and demonstrating how farm labourers had become victims of technological change. The analysis extended beyond the farm into a wider exploration of corporate power and agricultural production systems or what would henceforth be called the 'food commodity chain'.

Since the rise of GCC approach set out above, the global commodity chain concept has been used as one of a number of approaches to inter-firm relation that draws on the simple idea that the design, production and marketing of products involves a chain of activities divided between different agents (Dolan and Humphrey, 2000). For example, Porter (1990) uses the term value chain and value system to discuss company strategies in terms of management of relationships with other firms, arguing that: 'competitive advantage is increasingly a function of how well a company can

manage this entire system. Linkages not only connect activities inside a company but also create interdependencies between a firm and its suppliers and channels. Gibbon (2001) used the concept of GCCs to explain the Agro Commodity Chains on which he compares the value chains for agro-commodities before and after the 1980-90decade. From this he realized that, this period had subsequently two types of buyer-driven chains that have become differentiated: one with low entry barriers that is experiencing downgrading, and one with high entry barriers that is experiencing upgrading.

In this study, commodity chains are analyzed with respect to sequences of production and circulation in 'core' and related chains, the divisions of labour accompanying them, the distribution of earnings and profits they entail, and the forms of social and economic power through which market power is distributed. This study adopted the 'Commodity chain' analysis and focused on how green beans were produced and marketed, which groups were involved in each of these stages; and how they were organized and interrelated. The aim was to identify principles of market structure and organization and the basic pattern of distribution of earnings and profits.

2.3 Role of institutions in facilitating efficient commodity chain

Institutions are defined as the "rules of the game," both formal and informal constraints such as norms, conventions and codes of conduct that provide the structure for human interaction (North, 1990). Institutions emerge to minimize transaction costs and to facilitate market exchange. The evolution from personalized exchange to impersonal exchange, supported by legal systems that enforce contracts, is central to the process of growth and development (North and Thomas, 1973). Personalized exchange emerges in response to commitment failure, in which the risk of breach of

contract or opportunism is high, resulting from the lack of market information, inadequate regulation, and the absence of legal enforcement mechanisms. Institutions build trust and promote reputation and social capital as trade associations, solidarity networks, and groups that enhance ethnic or religious ties, emerge to circumvent commitment failure (Fafchamps, 1996)

Historically, institutions have emerged in various contexts to facilitate anonymous trade. Historical institutional analysis of pre modern trade in medieval Europe, shows that an institution known as the Law Merchant enabled impersonal exchange to occur in the 12th and 13th century Champagne fairs (North, 1990). The Law Merchants enabled trade through a reputation mechanism that stored information about traders' past behavior and sanctioned violators of the commercial code. Clay (1993) shows that coalitions of long distance traders in 19th century Mexican Califonia promoted honest exchange through information sharing and punishing of cheaters. Contrary to Clay (1993), Platteau (1994) argues that, decentralized arrangements based on reputation are not sufficient to ensure honest behavior and that private and public order institutions are necessary to create the social conditions necessary for markets to operate. Fafchamps and Minten (1999) demonstrate that the dominant contract enforcement mechanism in liberalized grain markets in Madagascar is trust-based relationships, where trust is established primarily by repeated interaction. The incidence of theft and breach of contract is low and recourse to the legal system is rare.

Newcomers to value chain analysis should note that international buyers determine value. Quality, reliability, volume, traceability and speed of delivery are among the elements that buyers take into account. Buyers' requirements, together with market conditions such as market access, standards and regulation and consumer preferences

determine whether market actors can compete effectively (ITF, 2003). Thus, a successful sector based strategy to capture more customers, needs to reflect market conditions, buyers' requirements and the processes required to deliver a product to the market. According to Weatherspoon and Reardon (2003), emergence of niche markets like supermarkets has reshuffled the institutions governing the marketing of fruits and vegetables and brought the challenges to small farmers in a two fold: as niche markets are diffusing and rapidly consolidating their procurement systems to gain economies of scale and of coordination, farmers need to supply larger volumes – transactions than was common in traditional markets. That implies either large producer scale or tight coordination among many small farmers who aggregate their supply to meet high volume demand over a full year. The second fold is shown in a fact that, the niche markets require standards which were not conformed by small farmers. These are such as quality differentiation for different markets and safety certification. This implies that in case farmers cannot meet the requirements of niche markets, there is reliance of importing products and so leaving these farmers out with their produce (Weatherspoon and Reardon, 2003).

2.4 Practical supply chains of fruits and vegetables in Tanzania

Marketing of horticultural crops (fruits and vegetables) has several features compared to other agricultural crops. Because of their high perishability, seasonality and bulkiness, fruits and vegetables require special care and attention in providing form, time and space utilities. This special care and attention requires capital intensive and technological advancement (Salum, 2002). In Tanzania, marketing of horticultural produce has never been under control of the government. It has been and continues to be entirely conducted by the private sector and operates as a free market where the laws of supply and demand regulate prices (Nyange *et al.*, 2000). Usually, traders who

buy horticultural crops from farmers transport the produce to the market where they sell them either directly to consumers or to other traders. Salum (2002) when studying factors influencing the marketing efficiency in Morogoro municipality and Morogoro rural district discovered that, the existing market chain is not specific. There are some retailers who make their purchases direct from producers and sell them to consumers while some retailers buy fruits and vegetables from producers and sell them to retailers in municipal markets. Mbelwa (1999) explored that about 70% of the horticultural produce are marketed through collection points whereby farmers bring their produce, and wait for traders. Wholesalers buy the produce and sell it through commission agents, retailers to final consumers. Only 10% of the produce is traded directly from producers to consumers. Fruits and vegetables marketed from producers to exporters and processors are 2% and 4% of all produced fruits and vegetables respectively. The marketing operations involved in the movement of vegetables and fruits included packing, assembling and physical handling, storage, transporting and selling. Ashimogo and Lazaro (1989) when studying vegetable marketing in Morogoro district found that marketing channel consists of producers, village middleman, transporters and retailers in urban markets. The findings of Mbelwa, (1999), when doing market review of horticulture in Tanzania revealed that bulk of fruits and vegetables from Arusha, Kilimanjaro, Coast, Morogoro, Singida and Tanga regions are marketed mainly in urban centers of Dar es Salaam, Arusha, Moshi, Tanga, Coast, Morogoro and Singida. He further identified that Kariakoo is the largest market for most of the horticultural produce from these regions and main market participants in the fruits and vegetables trade are farmers, local traders, interregional traders, brokers and retailers. Furthermore, Kashuliza, *et al.*, (2000) when studying the fruits marketing in Tanzania found that, during scarcity period, wholesalers procure the produce by themselves directly from the farms or buy from rural assembly

markets. At the peak of the season when there is over supply of fruits; some producers deliver their produce to urban markets where they sell to the wholesalers. There are also middlemen who buy fruits from producers and sell them in urban markets to wholesalers. Shafii (2003) explored that in Mgeta division the chain was as follows: 5% of producers sell their vegetables at the nearby villages, 5% sell their produce directly to Morogoro central market, 33% to Mlali market, 7% to Dar es Salaam and 50% to near by villages. According to Nyange *et al.*, (2000) most wholesalers sold their produce to retailers. However, a few of them wholesaled early in the morning and retailed at the later hours of the day and some sold their produce to other wholesalers. Selling by tender at a pre determined price is normally practiced by wholesalers who supply fruits to hotels and institutions such as schools, colleges and hospitals. The general supply channel of fruits and vegetables in the country is presented in figure 2 below.

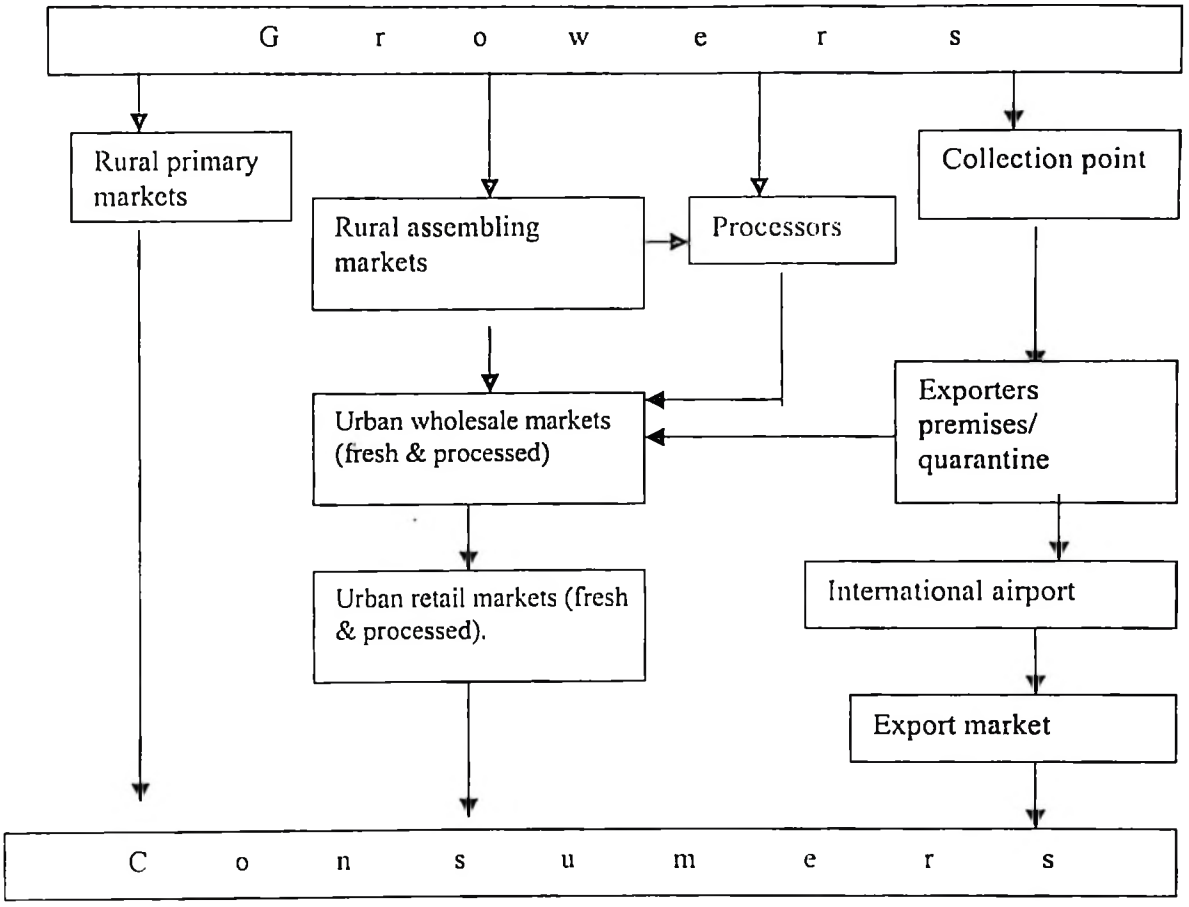

Figure 2: Generalized marketing channel of vegetables in Tanzania

Source: AICAD (2005).

2.5 Marketing features of fruits and vegetables in Tanzania

2.5.1 Quality attributes

Fruit supply, in effect, should offer a minimum standard of quality and stability. Buyers' surveys have clearly established the importance of quality, reliability of delivery and price as determining factors. Quality elements comprise grade of produce, defects, ingredients, mode of preparation of raw materials for processing, preparation and density of liquid medium, additives, drained weight, cleanliness,

strength and fill of container and packaging material, and storage conditions, to safeguard quality retention (Segre, 1998).

Production of horticultural products, with limited exceptions, is far below acceptable standards for supporting a viable export industry. About 70% of the land grown is cultivated by hand hoe and about 30% by plough and tractor. Inadequate farming practices results in lower yields, lower percentage of exportable produce and consequently in higher costs per unit, lower quality and increased costs rendering the produce much less competitive (Kashuliza *et al.*, 2000).

According to Govindasamy, *et al.*, (2002), survey participants were asked to indicate which factors among convenience, price, quality and freshness played an important role in their decision on where to purchase. Quality and freshness were selected by 63% and 59% of the participants, respectively. Furthermore, Govindasamy, *et al.*, (2002) found that, approximately 20% of the consumers valued convenience, while 16% indicated that price was the most important characteristic. Nearly 87% of the respondents indicated that availability and quality of fresh produce affected their decision on where to purchase. Furthermore 80% also care about the place of origin of the fresh produce they bought i.e. traceability. They further identified that, the compliace of the above mentioned quality attributes lead to the increase of consumption of fruits and vegetables. In the case of vegetables, approximately 78% of the respondents consumed a greater quantity than 5 years earlier. While 20% showed no change, only 2% had decreased their consumption. Approximately 81% purchased a wider variety of the fresh vegetables compared to 5 years earlier. Of the purchased vegetables, less than 8% preferred green beans among others (Govindasamy, *et al.*, 2002).

2.5.2 Payment pattern

According to Nyange *et al.*, (2000); when buying fruits 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 terms depending on the supply and demand conditions. When there is over supply in the market, producers normally sell their produce 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) found that, traders pay cash upon collection of fruits and vegetables. In some cases traders and farmers have contractual arrangements at which traders extend loans to farmers with condition that farmers will sell produce to the particular trader during harvesting period and pay back the loan.

2.5.3 Storage facilities

Mbelwa (1999) discovered that, fruits and vegetables are packed for handling and easy transportation in baskets, sacks and wooden boxes. The commonly used type of baskets is the '*tenga*'. Tengas are local packing materials that are made by using coconut palms or bamboo splits. Sacks include gunny bags and polythene bags. The tenga is mainly used in Tanga region for packing tomatoes, fresh beans, and mangoes while different sized sacks are used for cabbage, carrots, cucumber and onions. Wooden boxes are commonly used in Kilimanjaro and Arusha for packing tomatoes and onions. The use of poor packing materials result into loss of produce such as tomatoes that get crushed, hence heavy post harvest losses (Mbelwa, 1999). He further identify that, post harvest handling facilities are poor, and their life span is short to be used in transportation without causing much damage to fruits. "*Tenga*", gunny bags,

baskets and tins are used in Lushoto district as packaging materials. These packing materials are found to be cheap but can speed up the ripening due to limited ventilation. However, wooden crates are rarely used.

2.5.4 Access to market information

In Tanzania, small and medium scale horticulture producers are lacking market information (Kitule, 1999; Lynch and Ashimogo, 2000). Kitule (1999) further found that, the market for fresh fruits and vegetables is sensitive and complex, caused by the great number of products, the perishability of the product, the great influence of weather on production and on consumption, the high quality requirements, the great number of suppliers and big markets with many market segments. Hence it requires up dated market information. Nyange *et al.*, (2000), found that market information like potential fruit markets and prevailing prices among farmers was obtained from various sources such as friends and relatives (45%), own investigation at local markets (31%), and traders who directly come to the farm (24%). They argued that, reliance on friends for information could limit the flow of the up dated information and the information from some exploitative traders on the other hand, can be misleading because middlemen are relatively well informed of the market situation compared to farmers. None of the farmers mentioned radio as a source of information. These observations have the implication that there is insufficient communication linkage between farmers and major urban markets (customers) that would guide their market decisions and price control. The study done by Imperial College of Science, Technology and Medicine (2002) revealed that, 40% of farmers decided their marketing strategy based on the previous season's experience, 44% on the information provided by the traders and 16% based on information provided by family members and friends. Around 50 –

60% of the respondents indicated that the quality of their market information was good or very good, however this leaves a significant proportion of the respondents feeling that their information is poor.

In a study made by Nyange *et al.*, (2000) wholesalers were asked about sources of market information such as fruit prices in up country markets or availability of certain kinds of fruits in distant markets. Forty percent of the interviewed wholesalers got information from travelers who come from fruit producing areas. However, another 40% got market information by visiting the production areas. None of them relied on prices announced on the radio or in newspapers. The reasons given for not relying on the mass media was that prices announced were for urban markets and did not cover rural markets where they get the fruit supplies.

2.6 Problems of fruits and vegetables marketing

The biological nature of fruits leads to great fruit losses due to spoilage. In addition the warm and humid tropical climate contributes to fast deterioration of fruits. The study done by Nyange *et al.*, (2000) show that on average; about 11 – 50% of the total fruits produced were wasted through deterioration. This is about 51% of the 79 reported cases for the year 1992/93. Fruits losses go as high as 75% of all fruits harvested per season as evidenced by the remaining 14% of all 79 cases. Marketing of fruits and vegetables in Tanzania has been facing many problems one of which is unreliable and uncertain markets (Mlambiti, 1975). According to the research done by Mbelwa (1999), about 20% of the horticultural produce is wasted at farm level due to lack of markets. On account of this reason, unsold produce is damped on to the field and left to rot. He further noted that unreliability of markets for horticultural produce is linked with the poor conditions of feeder roads. This has caused difficulties in

transporting the produce from the farms to the markets. Estimates of post harvest losses of fruits due to mishandling, spoilage and pest infestation are quite high in Tanzania. Mlambiti (1975) estimates post harvest losses in fruits and vegetables to be up to 50%. Generally, the disorganized marketing system, with an unreliable and irregular transport service limits the number of outlets in a locality and weakens the farmers' negotiation position in relation to traders. This results in high profit margins to traders, high fruit wastage, or poor fruit quality, all making fruit marketing by producers very uncertain and uneconomical (Nyange *et al.*, 2000).

Major weaknesses facing Tanzania on the horticultural sector had been revealed by Ashimogo (2004) to be low productivity due to bad agricultural practices, lack of economies of scale, lack of strong horticulture policy, lack of targeted funding, poor supporting services, lack of entrepreneurial skills and lack of investment. Others are lack of research, poor track record, small size of farms, poor infrastructure, poor institutional coordination, and poor record keeping. Mbelwa (1999) found that horticultural production in the country is largely undertaken by small-scale producers who still use traditional methods of growing fruits and vegetables. This situation therefore, leads to small quantities of fruits and vegetables being produced per farmer. In order to obtain a commercial quantity, the produce has to be collected from different small and scattered plots of farms. The produce is taken to collection points usually alongside the roads where it is packed and transported to major markets. This is laborious, time consuming and costly in terms of time and money.

CHAPTER THREE

METHODOLOGY

3.1 The study area

Before sampling was done, a target group (i.e. green beans chain actors) was identified through secondary data information whereby major growing areas were identified and major markets for locally marketed green beans. Here sources like Kariakoo Statistics Department was visited, Ministry of Agriculture and Food Security, National Bureau of Statistics and green beans exporting companies (Gomba Estate and Serengeti Fresh).

Arumeru district in Arusha and Hai district in Kilimanjaro regions were chosen as producing areas. These areas have bi modal rainfall pattern. The short rains normally start in October and end in December, while the long rains start in February and end in June. This rainfall pattern permits two peaks of green beans production. Moreover, the two regions have abundant natural water sources that are distributed over 70% of the area. The hilly areas have numerous rivers and the low-lying areas of the rift valley have soda-lakes. Availability of water for irrigation in the two regions (Arusha and Kilimanjaro) supports green beans production throughout the year because irrigation is necessary in green beans production. According to Arusha Region Social Economic Profile (2000), the area under irrigation is 63% of the total irrigable land in the region.

Arusha and Kilimanjaro regions are relatively well served by their network of roads which link even the remotest rural population clusters. The general quality of roads is satisfactory. Air services needs are well catered for by the Kilimanjaro International Airport. Electric power supply is present in almost all business centers. This supports

the green beans handling as transport is easy and use of cold storage facilities is possible due to presence of electric power.

Dar es Salaam region was chosen as the major domestic market for the green beans. This is because most of her residents (87.4%) are engaged in non agricultural production. Its only 12.6% of Dar es Salaam residents are engaged in agricultural production. This implies that the remaining residents have to import food stuffs (green beans included) from other regions. The relative huge population of Dar es Salaam residents was another factor at which the researcher based to choose the region as the major market for green beans marketed domestically. According to Population and Household Census (2002), the total population of Dar es Salaam region was 2 487 288 residents with average annual growth rate of 4.4%.

3.2 Research design

Non-experimental design was employed whereby a cross sectional research design was used. This design was adopted because it is a one-time affair and is designed to obtain a snapshot of a representative group of chain actors at a given moment in time. The design has great degree of accuracy and precision in social science (Deaton, 1997). According to William (2002), this design allows for a descriptive analysis as well as for determination of relationships between variables.

The target population for this study was green beans producers and marketers in three regions (Arusha, Kilimanjaro and Dar es Salaam). The sample involved chain actors in green beans producing and marketing areas. However, Dar es Salaam was exceptional as it was taken as the market for the produced green beans.

3.3 Sampling

3.3.1 Selection of sample areas

Purposely selection was employed at the first stage, where two regions (Arusha and Kilimanjaro) that are major producers of green beans were selected and one region (Dar es Salaam) that is the major market of locally marketed green beans. Secondly, major producing areas; again the purpose selection was made to identify the major producing districts in each of the regions. At this stage Hai district in Kilimanjaro region and Arumeru district in Arusha region was selected. For markets in Dar es Salaam, Kariakoo and Kisutu were selected. In stage three, random sampling technique was employed to have different number of chain actors in the identified regions.

3.3.2 Selection of respondents

According to Boyd *et al.*, (1981) a random sample should at least constitute 5% of the total population to be representative of the population. The sample comprised 21 green beans chain actors out of 36. The large percent of sample size (58%) taken was due to the small number of population identified. Of these, four were farmers, 13 traders, two Supermarkets, and two big hotels.

Green beans producers were identified by physical visits to the green beans farms. The information of where green beans farms were located was obtained from secondary sources of data like Kariakoo Market, the department of Statistics, Ministry of Agriculture and Food Security (MAFS), National Bureau of Statistics (NBS), and exporting company of Serengeti Fresh and Gomba Estate. Assemblers were identified by physical visits to the farms at which transactions between farmers and assemblers took place. Wholesalers and retailers were identified by visiting Kariakoo and Kisutu markets. At each marketing node, a number of questions were asked to identify the population performing particular function from which the sample was drawn. After the population was identified, purposive proportionate stratified sampling was done from the number of market participants present at each node of green beans supply chain.

Table 1 shows the distribution of sample chain actors along the green beans supply chain. Farmers were chosen based on the fact that, they had grown green beans during the season when this study was undertaken. Means of transport to the farm was another factor for the farm to be included in the sample, i.e. green beans farms found within five kilometers from the feeder roads were included. Other market agents were assemblers, wholesalers and urban market retailers whose criteria for inclusion in the study were based on the marketing of green beans during the particular period. A total of 21 out of 36 market agents were sampled for the study (Table 1).

Table 1: Distribution of sample chain actors along the green beans chain

Population and sample of respondents selected			
Type of respondents	Total number of marketing agents	Sampled respondents	Sample as % of the total
Farmers	7	4	57.14
Assemblers	6	4	66.67
Supermarkets	4	2	50.00
Big hotels	6	2	33.33
Local Wholesalers	5	4	80.00
Small retailers	8	5	62.50
Total	**36**	**21**	**58.33**

3.4 Data collection

Both secondary and primary data were collected. Secondary data provided information on the trend of green beans production and marketing.

3.4.1 Secondary data collection

Secondary data were obtained from a number of sources. Various sources like books, research reports and other documents such as: National Bureau of Statistics (NBS), Serengeti Fresh Company Limited, and Ministry of Agriculture and Food Security (MAFS) and Kariakoo Market Statistics Department were consulted.

3.4.2 Primary data collection

Primary data were collected from the different sample market agents along the chain using a checklist and structured questionnaire. The checklist (Appendix 1) was used to seek information from three supermarkets and two big hotels. The supermarkets visited are: Imalaseco, Shrijis and the Shoprite Supermarket while big hotels visited are New African and Sea Cliff. Questionnaires (Appendix 2) were used to collect information from four farmers and 13 traders.

The questionnaires were pre-tested in a pilot survey that was carried out with three market agents in Dar es Salaam including a wholesaler, retailer, and supermarket. Kariakoo and Kisutu markets were visited and Imalaseco supermarket was also visited. This was done to check the relevance and quality of the questions. After pre testing, the questionnaires were revised to obtain the final version presented as Appendix 2.

Field interviews were carried out during February and March 2005. Interviews with farmers took place at respondents' farms, while those with traders were performed at market places where transactions were taking place. For big hotels and supermarkets, interviews were arranged and performed at their work place with the officers in charge. Appointments to visit the selected market agents were done before the date of interview.

3.5 Data analysis

Data collected from the primary sources were verified, coded and summarized prior to analysis using the Statistical Package for Social Sciences (SPSS) computer program in conformity with the objective of the study. One main analytical procedure used to analyze data was descriptive statistics at which univariate analysis was used to summarize the information related to each variable. Summary statistics were calculated using a sub program descriptive. The distributional properties were analyzed using sub program frequencies and charts. A cross tab sub programme was used for bivariate analysis to study the relationship between pairs of variables. Profit margins and marketing margins were estimated to find the efficiency measures and performance of production and marketing of green beans.

In addition to descriptive statistics, marketing margins were worked out. Marketing margin is the difference between prices at two market levels. The term marketing margin is most commonly used to refer to the difference between producer and consumer prices of an equivalent quantity and quality of a commodity. Furthermore, it may also describe price differences between other points in the marketing chain, e.g. between producer and wholesale. Marketing margin was estimated by subtracting average prices at the consecutive nodes of the chain.

Profit margins for chain actors were also estimated by adding the total sales and subtracting all the costs incurred at each node of the chain. Costs included the product loss due to wastage. Profit margin was used to indicate who had more influence in the supply chain, as it was assumed that "the more profit one gets the more influence she/he has in the chain". The proportion of final consumer price received by actors along the channel was estimated to indicate the efficiency at different nodes of the chain.

3.6 Data limitations

The following problems were encountered during the data collection exercise:

(i) Poor record keeping among marketing agents was encountered with exception of supervisors of green beans farms. Apart from poor record keeping there was skepticism in provision of information. Some respondents were reluctant in giving information.

(ii) Literature on the green beans production and marketing was too limited. Hence the author used the general literature of fruits and vegetables. Web based information was also sought. However, most of it did not reflect the

actual situation in Tanzania but revealed realities in different countries whose business challenges and opportunities are different from those of Tanzania.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Socio economic characteristics of the marketing agents

On average half an acre of green beans was grown per week in a relay-cropping pattern. This was to ensure continuity of green beans production. The maximum area of green beans grown was two acres per week. Green beans were sold to exporting companies namely Gomba Estate and Serengeti Fresh both located in Arusha. Farm supervisors were employed to supervise the farm generally as extension workers. Under farm supervisors, each farm had five labourers who received training from contracting companies to work on a particular farm. However, there was no formal specification of period required to work to a particular farm. Moreover, there were no means of enforcing compliance of agreements between farm owners and labourers as the agreements were verbal and informal. Nevertheless, there was no case reported on the violation of the above stated agreement.

Three out of four sample farms were owned by sole proprietorship; only one farm was owned by corporation and belonged to missionary sisters. The sole proprietorship ownership pattern might be due to high risk in green beans production. Green beans are susceptible to diseases that necessitate proper agronomic practices and proper coordination. Lack of either or both would lead to heavy losses. Moreover, three out of four farms (75%) were supervised by men and only one farm (25%) was supervised by a woman (Table 2). The ownership followed the same pattern. Probably this is due to the fact that, the capital investment required is high and women have limited access to credit, which could act as source of capital. According to FAO and SDD (1996) women comprised only 15% of the total membership of formal rural savings and

credit associations in the developing countries. Women's access to formal financing is limited by the small size of their agricultural enterprises, high rate of illiteracy and predominance in the subsistence sector. Other alternative reasons describing why women do not own green beans farms is that, the farm needs to be entitled or surveyed but women are a disadvantaged group whose access to land is limited. According to Cagatay, *et al.*, (1995) women have limited access to the means of production such as land and support services such as credit.

However, at other nodes of the chain, participation of women and men was generally balanced. At assembling and retailing stages five males and four females were engaged in trading while, 2 males and 2 females participated in trading at the wholesale stage (Table 2). Access to capital may describe the balancing of participation of males and females in trading green beans, as the capital invested is small (about one fifth of the capital required for green beans farming) enough to allow women to join the venture. Therefore government and policy makers need to address more on female access to capital sources if women are to be rescued from poverty.

Table 2: **Sex distribution and the type of respondents in the chain**

Region	Type of respondents	Sex		Non response	Total
		Male	Female		
Dar es Salaam	Small trader	5	0	0	5
	Wholesalers	1	1	1	3
	Sub total	6	1	1	8
Kilimanjaro	Supervisor	2	0	0	2
	Small trader	0	3	1	4
	Sub total	2	3	1	6
Arusha	Supervisor	1	1	0	2
	Small trader	0	1	1	2
	Wholesaler	1	1	1	3
	Sub total	2	3	2	7
	Grand total	10	7	4	21

Education distribution pattern along the chain indicates that, the more education attained the lesser engagement in the production and marketing of the green beans. This is revealed through a large number of chain actors with low education engaged in the trading of green beans (Table 3). Most of chain actors (12 out of 21 i.e. 57%) possessed primary school education, four chain actors (19%) possessed ordinary secondary school education, four chain actors (19%) possessed advanced secondary school education and only one chain actor (5%) possessed post secondary school education. Production and trading of green beans has been an alternative employment to those who have low education and hence low access to office jobs. This pattern of education distribution with functions performed along the chain implies that, educated people prefer formal employment, rather than having their own enterprises. This is dangerous for the country, because today's globalized environment requires education in doing business competitively.

Table 3: Education level of respondents along the chain

Type of respondents	Primary school	Ordinary Secondary Education	Advanced Secondary Education	Post secondary education	Total
Supervisor	1	-	2	1	4
Small trader	7	1	1	0	9
Wholesaler	1	2	1	0	4
Non response	3	1	0	0	4
Total	12	4	4	1	21

Among 21 interviewed marketing agents, 94.1% were aged between 18 and 55 years and 5.9% were aged above 55 years. The minimum age of the interviewed farmers was 27 years while maximum age was 60 years. The average (mean) age was 43.2 and the standard deviation was 10.1. This reveals that, green beans production and marketing is largely done by all age categories. However, most of the sample actors

were within the active age group of 18 to 55 years. Thus income generated from green beans production and marketing was useful for the family as large proportion (94%) of chain actors were active age categories. However, income generated from green beans production and marketing was also acquired to the old aged people (2 i.e. 9%) of age above 55 years.

Most of interviewed marketing agents (80.9%) also engaged in other income generating activities. These were farming, business and wage employment. At the farm level, supervisors were employees of farm owners and were doing this as their main income generating activity. Other family members like wives/husbands and children did other activities like small businesses and farming to support their families. Another crop grown in line with green beans was baby corn that was used as windbreak although in the final analysis it was also used to get income. Crop rotation was done in some farms to allow nutrients to be recycled for subsequent crops grown. At assembling stage, chain actors were only engaged on the assembling of green beans though; they sometimes participated in retailing green beans nearby their producing areas. And at the wholesale stage, chain actors only dealt with marketing of green beans. Small retailers were engaged in retailing other horticultural crops like peas, plums, avocados, lemons, pineapples, cabbages, tomatoes, sweet pepper, carrots and amaranthus. Those who were supplying to big hotels and supermarkets also supplied other foodstuffs like bananas, rice, maize flour and legumes. Probably this was due to the fact that, at retail stage the amount of green beans marketed was small, about five kilograms per day. This could not generate enough income to cater for basic household needs.

4.2 Green beans production and marketing trends in Tanzania

4.2.1 Green beans production

Green beans seem to be a new crop in the Tanzanian context. It was introduced in Tanzania in early 1990's. This is why it is termed as non-traditional cash crop. Table 4 shows production of green beans from 1997 to 2002. There was a sharp decrease of green beans production (45.9%) during the year 1998. The great decrease of green beans production may be attributed by the high rainfall experienced at the end of the year 1997 towards the year 1998 called El Nino (Table 4). It was estimated that 1149.4mm and 1940mm of rainfall were received in Arusha and Kilimanjaro in 1997, which led to great losses of green beans produced. This is because, green beans production requires just moderate moisture to grow in a good condition. After the year 1998, the production has been increased regularly though at the small rate (Table 4). The small rate of growth may be accounted for the nature of green beans production as it requires systematic and coordinated chain if it is to be profitable. The limited number of exporting companies (only two) of green beans both located in Arusha may contribute to little rate of green beans production.

Table 4: Production statistics of green beans, Tanzania

Year	Production (Metric tones)	Production growth rate (%)
1997	1 386	45.8
1998	750	-42.4
1999	1 068	-59.2
2000	1 700	-0.6
2001	1 710	-2.3
2002	1 750	-

Source: Ministry of Agriculture and Food Security, 2002

rainfall, so when moisture becomes excessive green beans get diseases like molds, and the rate of rotting increases. According to the Ministry of Agriculture and Food Security, Food Security Department (Meteorological Unit) (2005), there is more rainfall in May than in November (Table 6).

Table 6: Rainfall distribution pattern of May and November in Arusha and Kilimanjaro regions

Years		1996	1997	1998	1999	2000	2001	2002	2003
Kilimanjaro	May	194.6	196.3	-	113.9	52.0	145.4	71.8	188.9
	November	13.9	72.3	-	37.3	123.3	63.0	27.1	1.1
Arusha	May	74.6	139.2	-	75.2	30.8	47.7	42.3	128.3
	November	46.9	180.3	-	130.0	101.4	43.3	36.8	18.1

Source: Ministry of Agriculture and Food Security, Food Security Department (Meteorological Unit) (2005).

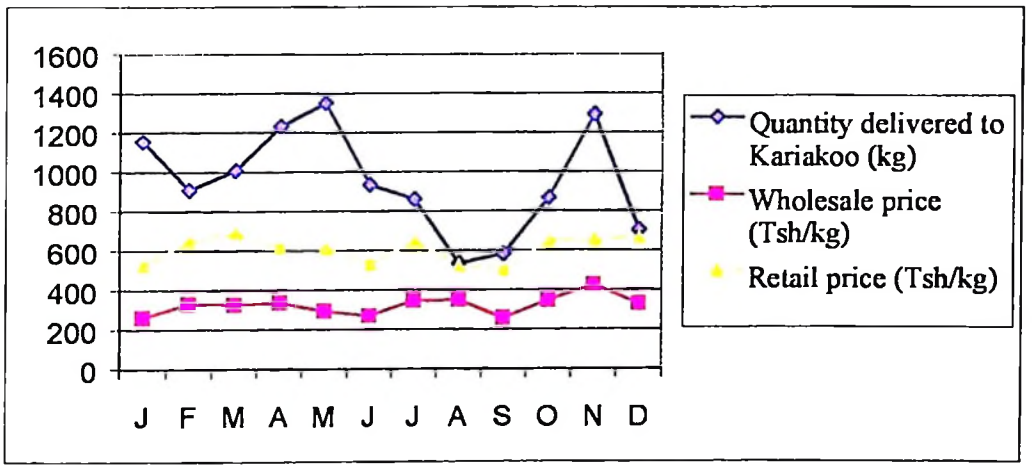

Figure 3: Green beans marketing trend (2000 – 2004)

Source: Compiled from Kariakoo Market Department of Statistics

4.3 Green beans marketing channels

From the survey carried out, most farm owners grew green beans for the export markets. They supplied the exporting companies of Gomba Estate and Serengeti Fresh both located in Arusha. If green beans grown by contracted farmers did not meet

quality and standards for the exporting companies, then that amount was rejected and sold to the local markets. The rejected green beans sold in the local markets were in addition to supplies from COMATEC who supplied the Shoprite supermarket branch in Dar es Salaam.

About 88% of green beans produced was sold to exporting companies that sold them to the European markets. Direct supply from farms to supermarkets were 3.3% and 8.8% which was sold through the local markets (Figure 4). Nine percent of produced green beans was sold in the local markets through assemblers in the producing areas (Arusha and Kilimanjaro) to wholesalers in Dar es Salaam. Wholesalers sold green beans to retailers. Retailers had two outlets to customers: direct sales and as suppliers to big hotels. Big hotels cooked green beans with other spices and vegetables. The remaining 3.3% was sold directly to consumers through supermarkets.

Of all the produced green beans. 12.1% (i.e. 8.8% rejects and 3.3% which was supplied by COMATEC to the Shoprite supermarket in Dar es Salaam and supply through local markets, (Figure 4)) was marketed locally leaving 87.8% that was exported through exporting companies. Prices were 100, 450 and 662.5 Tanzanian shillings per kilogram at the farm level for rejects, green beans supplied by COMATEC to shoprite and green beans sold to exporting companies respectively. As noted above the contributing factor for price differences is the difference in quality and the market segmentation. Quality standards specified by exporting companies were many and very specific. These quality standards were: green beans were required to be free from pests, wounds, scars and bruises; free from mud, dust or other debris; not broken or damaged in any manner, not bent, picked with the remains of the calyx intact, fresh and not pre wilted by sunburn or other sources of heat, and naturally

green, not tainted by disease and smoke. On the other hand, the practiced quality attributes of Shoprite to the COMATEC company were stated as: free from pests and dusts; not broken, not bent, fresh and not pre wilted by sunburn and naturally green not tainted by diseases. Rejects from exporting companies were sent back to farmers and were sold to the local markets.

Of green beans marketed locally, 25.4% was sold to the surrounding producing areas by assemblers to consumers at an average price of 308 Tsh/kg. Note that, assemblers who sold some rejects to Dar es Salaam were the ones retailing green beans at Arusha and Kilimanjaro local markets. When asked about the reasons for not selling to Dar es Salaam markets, they stated that they could not get sufficient quantities to sell to other regions. Although they were of the opinion that selling to Dar es Salaam markets was more paying, as the benefit was about three times that obtained when selling in markets around producing areas, they however contended that, selling to Dar es Salaam markets needed sufficient amounts to enjoy economies of scale in transportation. So if the green beans obtained were not enough they used to sell in the local markets at the producing areas as retailers.

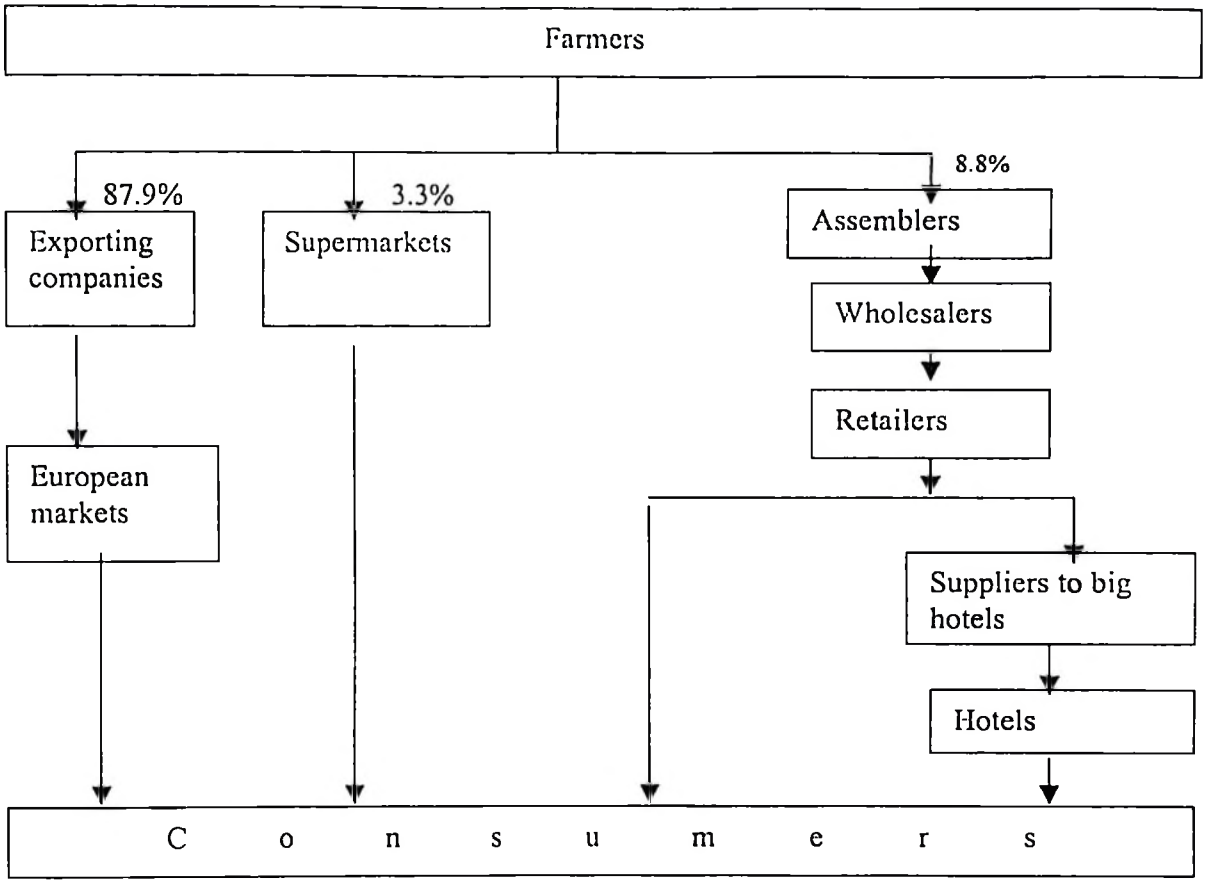

Figure 4: Marketing channels of green beans

The other proportion of locally marketed green beans were 20.2% and 54.6% which were sold in Dar es Salaam at an average price of 550 Tsh/kg and 708 Tsh/kg for rejects in the local markets and to the shoprite respectively. Finally, Shoprite sold green beans to consumers at an average price of 1 458 Tsh/kg compared to rejects that were sold in the local markets at a price of 1 125 Tsh/kg.

Wholesalers in Dar es Salaam usually receive green beans at Ubungo bus station. This is because; green beans were transported in passenger buses, since the quantities were too small to justify hiring trucks. From Ubungo, green beans were transported to Kisutu retail market and some to Kariakoo market. At both markets (Kisutu and Kariakoo), wholesalers sold green beans to retailers who in turn sold them to

consumers. At wholesale node, green beans were found to be a hot cake because in all of the markets wholesaling of green beans was ended at about 0900 hrs. Business started very early (at about 0500 hrs) in the morning and at 0900 hrs only retailers were trading green beans. None of the wholesalers of green beans were engaged in selling to consumers. This was a unique characteristic as for most of other agricultural produce wholesalers also become retailers because they usually sell to both retailers and consumers.

Big hotels received green beans from suppliers who usually supply not only green beans but also other foodstuffs. Suppliers obtained green beans from Kariakoo and Kisutu markets. There was a similar pattern of prices because the prices mentioned by sellers in the different marketing nodes were the same as those mentioned by buyers at those marketing nodes. The situation was however different from supermarkets whose supply of green beans was directly from farms. Shoprite was supplied by COMATEC farm from Arusha, and farmers from Lushoto supplied Shrijis. At supermarkets, people other than supermarket owners, hired the spaces within the supermarket for selling fruits and vegetables independently. Fruits and vegetables like cabbages, cauliflowers, mangoes, apples and pineapple were traded alongside green beans.

4.4 Profit margin analysis of green beans along the chain

4.4.1 Profit margin analysis at farm level

The average profit margin per acre was estimated to be 873 472 Tsh. Returns per shilling invested was found to be 0.56 Tsh whereas returns per kilogram harvested was 212 Tsh and returns per acre rented was found to be 6.35 Tsh (Table 7).

Table 7: Green beans budget in Arusha and Kilimanjaro regions

SN.	Parameter	Parameters' Value
1.	Area under cultivation (acres)	1
2.	Total Output (kg)	4 110
3.	Fine yield (kg/acre)	3 610
4.	Reject yield (kg/acre)	500
5.	Average price of fine yield (Tsh/kg)	663
6.	Average price of reject yield (Tsh/kg)	100
7.	Gross revenue/acre [(3)*(5) + (4)*(6)] (Tsh)	2 443 430
8.	Total labour (days)	56
9i.	Cost of land preparation/acre (Tsh)	75 000
10.	Cost of fertilizer (Tsh)	240 666
11.	Value of seeds (Tsh)	47 000
12.	Value of pesticides (Tsh)	199 112
13.	Value of inputs (9-12) (Tsh)	561 778
14.	Value of hired labour (Tsh)	870 500
15.	Renting costs/acre (Tsh)	137 624
16.	Transport costs (Tsh)	0
17.	Total costs (13-16) (Tsh)	1 569 902
18.	Gross margin (7) – (17) (Tsh/acre)	873 472
19.	Returns per shilling of land rent (18)/(15) (Tsh)	6.35
20.	Returns per shilling of input invested (18)/(17) (Tsh)	0.56
21.	Returns per kilogram harvested (18)/ (2) (Tsh)	212.52

The major buyers of green beans were exporting companies of Serengeti Fresh and Gomba Estate, both of them located in Arusha. Rejected beans that did not meet quality standards of importing countries were sold in the local markets in Arusha and Kilimanjaro and some were sold to Dar es Salaam markets. The main reason explaining the relative small profit margin compared to other marketing nodes of the chain is the nature of the enterprise. Green beans production is labour intensive requiring effective supervision at every stage of production.

4.4.2 Profit margin analysis at assembling node

Assemblers received a total profit of 248 462 Tshs per month per person. For that case, assemblers had returns per labour day of 8 282 Tsh, and returns per kilogram of green beans traded of 201 Tsh while returns per shilling invested was found to be 1.86 Tsh (Table 8).

Table 8: Profit margin analysis for village assemblers of green beans

SN	Parameter	Parameters' Value
1.	Quantity of green beans bought (kg)	1 239
2.	Buying price/kg	100
3.	Purchase costs (1)*(2)	123 900
4.	Transport costs	0
5.	Packaging costs	4 000
6.	Taxes	3 000
7.	Storage costs	2 250
8.	Total cost incurred (3-7)	133 220
9.	Total labour days	30
10.	Average selling price/kg	308
11.	Gross revenue (1)*(10)	381 241
12.	Gross margin (11) – (8)	248 462
13.	Returns per labour day (12)/(9)	8 282
14.	Returns per kilogram of green beans (12)/(1)	201
15.	Returns per shilling invested (12)/(8)	1.86

The returns per shilling invested was found to be high (1.86 Tsh) compared to the return per shilling acquired at the farm level (0.56 Tsh). However, returns per kilogram of green beans traded were relatively small (201 Tsh) compared with that of farmers (212 Tsh). It was found that an average of 41kg of green beans were sold per day. The high marketing cost (39%) of the total cost involved and seasonal nature of green beans production worsens the situation.

4.4.3 Profit margin analysis at wholesale node

At the wholesale node the total profit was found to be 594 980 Tsh per person per month. Returns to labour was found to be 19 833 Tsh per day and return per kilogram of green beans traded was found to be 338 Tsh (Table 9).

Table 9: Total profit analysis for wholesalers of green beans

SN	Parameter	Parameter's Value
1.	Quantity of green beans bought (kg)	1 958
2.	Buying price/kg (Tsh)	308
3.	Purchase costs (1)*(2) (Tsh)	603 772
4.	Transport costs (Tsh)	36 744
5.	Packaging costs (Tsh)	0
6.	Taxes (Tsh)	3 000
7.	Storage costs (Tsh)	9 000
8.	Total cost incurred (3-7) (Tsh)	652 516
9.	Total labour (days)	30
10.	Quantity sold (kg)	1762
11.	Average selling price/kg (Tsh)	708
12.	Gross revenue (11)*(10) (Tsh)	1 247 496
13.	Gross margin (12) – (8) (Tsh)	594 980
14.	Returns per labour day (13)/(9) (Tsh)	19 833
15.	Returns per kilogram of green beans (13)/(10) (Tsh)	338
16.	Returns per shilling invested (13)/(8) (Tsh)	0.9

Returns per shilling invested were found to be 0.9 Tsh at the wholesale stage, which is about half of returns per shilling at the assembling node 1.86 Tsh (Table 9). This implies that, the costs incurred at the wholesale stage are high, though other measures of efficiency such as labour day and returns per kilogram traded were higher than those at the assembling stage. Efficiency at wholesale stage is still relatively lower than that achieved at the assembling node in the chain.

4.4.4 Profit margin analysis at retailing node

At the retail node returns to labour per month was found to be 201 140 Tsh with returns per labour day being about 6 704 Ths, returns per kilogram of green beans sold being 290 Tsh and returns per shilling invested being 0.4 Tsh (Table 10).

Table 10: Profit margin analysis for retailers of green beans

SN	Parameter	Parameters' Value
1.	Quantity of green beans bought (kg)	813
2.	Buying price/kg (Tsh)	708
3.	Purchase costs (1)*(2) (Tsh)	576 110
4.	Transport costs (Tsh)	0
5.	Packaging costs (Tsh)	500
6.	Taxes (Tsh)	3 000
7.	Storage costs (Tsh)	0
8.	Total cost incurred (3-7) (Tsh)	579 610
9.	Total labour (days)	30
10.	Average selling price/kg (Tsh)	1125
11.	Quantity sold (kg)	694
12	Gross revenue (11)*(10) (Tsh)	780 750
13.	Gross margin (12) – (8) (Tsh)	201 140
14.	Returns per labour day (13)/(9) (Tsh)	6 704
15.	Returns per kilogram of green beans (13)/(11) (Tsh)	290
16.	Returns per shilling invested (13)/(8) (Tsh)	0.4

Source: Own Survey Data (2005).

The difference in quantity bought and quantity sold was due to wastage. It was estimated that 14.6% of green beans were damaged before retailers sold them to customers. The efficiency of marketing at this point seem to be a bit small compared to that at wholesale point. This obeyed the rules of economies and diseconomies of scale since at the wholesale node, the amount of green beans handled was larger than at the retail node, and proportion of green beans deteriorated before sale at retail node was high than that at the wholesale stage. High rate of deterioration (14.6%) at retailing node is explained by the poor storage facilities and the duration of trading for

green beans. It was estimated that, in average, one retailer sold only five kilograms of green beans per day.

4.4.5 Market power distribution along the chain

Wholesalers were found to have relatively more market power than other chain actors. This was revealed by the efficiency measures of returns per kilogram and returns per shilling invested (Table 11). Returns per kilogram were highest to wholesalers (338 Tsh/kg). However, returns per shilling single out assemblers to be more efficient than other chain actors. The reasons for large returns per shilling at the wholesale node with relatively small returns per shilling is accounted for by the time at which they are handling green beans. It was found that, while assembling from different farms, assemblers may take up to three days collecting green beans enough to transport to Dar es Salaam. It was also found that wholesalers used an average of five hours in a day to sell a load collected from assemblers.

Table 11: Summary of efficiency measures among marketing agents

	Returns per kilogram	Returns per shilling
Farm level	212	0.56
Assembling node	201	1.86
Wholesale node	338	0.9
Retailing node	290	0.4

Another reason for high market power of wholesalers; is the large volume of green beans handled hence economies of scale. Wholesalers handled 1 958 kg of green beans while assemblers handled 1 239 kg and retailers handled 813 kg per month. Access to market information was another factor, which made wholesalers to be more powerful than other chain actors. Wholesalers had information on green beans delivered at the market and so they had a big role in price determination. So

wholesalers had more influence in the green beans marketing in Tanzania as in several enterprises like manufacturing industry, processing etc. In order to have even distribution of market power, improvement of telecommunication infrastructure to increase the use of mobile phone in the rural areas and initiation and use of Internet cafés should be addressed. More over, efforts which have been initiated by some farmers' organizations to develop market information centers/facilities should be promoted.

The next group having market power was retailers with returns per kilogram of 290 Tsh. Regardless of the small amount of green beans traded by retailers, there was assurance of markets and so, green beans traded was still relatively more remunerative at the retail node than at assembling and at the farm levels.

Assemblers in the producing areas (Arusha and Kilimanjaro) lacked information on demand of green beans in Dar es Salaam due to distance between markets. Hence they merely depend on information from wholesalers mostly attained through phoning. Farmers on the other hand, had limited market information. The only source of information was traders who came to their farms; they knew nothing on the prices of green beans in different market places. This was catalyzed by the fact that, farmers were not producing for local markets hence they perceived rejected green beans that would not meet quality requirements of export markets as losses. For the fine green beans; most farmers (three out of four i.e. 75%) did not have information on the prices in the Far East at which green beans were exported to. Distance between the market and the home producing area may contribute to lack of proper and timely market information. Generally in a descending order the market power along the chain was distributed as: wholesalers $\Rightarrow$ retailers $\Rightarrow$ farmers $\Rightarrow$ assemblers.

4.5 Prices and marketing margins along the green beans supply chain.

Average prices at different nodes are presented in Table 12. The price was lowest at the farm level and highest at the retail level. This complies with cost based pricing method in which prices are determined by the costs incurred in production. At the farm level, it was expected that only production costs were incurred whereas at assembling stage costs of assembling and transporting from farm to assembling place plus a small profit increased price. At the wholesale stage, cost of transporting, storage and marketing green beans to Dar es Salaam market increased prices. At the retail stage the increased cost of wastage explained why the market margin was relatively higher at the retail level than other nodes in the chain.

Price differences throughout the year followed the production pattern. Prices were highest during March and August when the amount of green beans delivered to the local markets is small. On the other hand prices were low during May and November when the quantity of green beans delivered to the local markets were relatively large. It was during these months when rainfall is relatively high and mosaic virus disease incidences increase. During these months, rate of deterioration increases, leading to substantial amount of green beans being rejected in the export market and entering the local markets. The prices and quantity delivered to the local markets complied with the demand theory at which, prices vary inversely with the quantity handled in the market.

Table 12: Market margin and producers' share distribution along the chain

Marketing node	Price (Tsh/kg)	Marketing margin	Producer share (%)
Farm level	100		
Assembling level	308	208	32
Wholesale level	708	400	14
Retail level	1 125	417	9
Exporting companies	3 879	3 216	17

NB: The price paid by exporting companies to farmers was 663Tsh/kg

Marketing margins were estimated and found to be 208Tsh, 400Tsh, 417Tsh and 3 216 Tsh for assemblers, wholesalers, retailers and exporting companies respectively. Producers' share was distributed as shown in Table 12. Producer's share was calculated by dividing the farm gate price to the subsequent average price levels along the chain. The large marketing margin for exporting companies may be described with the fact that: exporting companies provide extension services to contracted farmers, they store green beans in cold facilities, and air freight transport of green beans to European markets. Simultaneously, reasons describing a relatively larger marketing margin at the retail level are amount of green beans wasted before being sold to final consumers. It was estimated that 14.6% of green beans traded by retailers were damaged before reaching customers. So there was a need to find a way of compensation for the decayed green beans. Producers' share to the consumer shilling was 9% at the retail node. It was small as in most agricultural production ventures. The small producer's share is contributed to the short post harvest life span of green beans and the small amounts marketed.

4.6 Market actors' relationship and institutions set up

When different market agents in the chain were asked whether they trade to specific customers, 66.7% said yes, while 33.3% negated it. When asked for reasons trading to specific customer; they indicated that at the farm level, contracts bind them to sell to

the specific exporting company, while at wholesale and retail nodes intimate relationship and reliable markets with regular payments were factors influencing trading with specific customers (Table 13). When asked how they developed the relationship; they clarified that; they had been trading together for long periods of time hence trustfulness has been developed between them. The reasons for developing those relationships were stated to be: compliance to the contract among trading partners, facilitating green beans marketing, building of trustfulness a mong t rading partners and reducing t ransaction c osts for marketing the s mall quantities of green beans handled (Table 13). With good relationship, assemblers in Arusha and Kilimanjaro were just phoning to wholesalers in Dar es Salaam to give information on the quantity of green beans transported and the bus by which green beans have been transported. Payment was d one through s ending money by p assenger b uses as i t i s done for sending green beans. This reduced the transaction costs to both assemblers and wholesalers. These findings are similar to those of North and Thomas (1973) who found that, institutions reduce transaction costs among the trading partners. The relationship among green beans chain actors inform entrepreneurs who want to venture in the marketing of green beans of the situation because it may take some time before they get customers as those who were trading green beans had already developed relationship with their trading partners. However, it was encouraging because the means of developing such relationship were stated to be long period of time trading together. The new entrants have to prepare themselves to meet trading partners expectations before they become accepted in the chain.

Mode of delivery of green beans was done as follows: buyers collect green beans in respective marketing nodes, with the major means of transport being bicycle (83.3%) and wheel barrow (16.3%). However, assemblers sent green beans to wholesalers

through passenger buses. Wholesalers effected payment for purchases from assemblers through passenger buses through which they also paid the transport costs of green beans.

Table 13: Reasons for trading to specific customers

	Farm supervisor	Assemblers	Whole salers	Retailers	Total
Contract	4	0	0	-	4
Trustfulness	0	1	2	1	4
Reliable markets	0	1	1	2	4
Reduction of transaction costs	0	2	1	0	3
Non response	0	0	4	2	6
Total	4	4	8	5	21

4.6.1 Price setting

At the farm level, buyers set prices because it was the contract that specifies prices. Thus contracted farmers look at contract price as guidance for their decision to invest in the enterprise. This is in line with the study done by Steven (2000) who found that, looking at the entrance point, market actors observe the price that exists and with that information, form expectations as to whether investment should occur at levels, which will expand, contract or maintain production. Those expectations, along with financial constraints and other factors not explicitly shown, result in actual investment in seasonal croping. Moreover, farmers were found to be price takers because they did not have information on green beans exported to distant European markets. This is similar to findings by Nyange, *et al.*, (2000) and Kitule (1999) in their studies on fresh fruits marketing in Tanzania whose findings show that, producers are mostly price takers because the middlemen have greater power of negotiating for prices and can easily secure means of transport and market information.

On the other hand, farmers set prices for green beans marketed locally. But to them, it was a throw-away price, because they did not intend to sell to local markets at low prices. Generally buyers seem to dominate in setting price (60%) followed by assemblers (20%) and wholesalers (20%) while in some occasions both assemblers and wholesalers set prices (20%). The criteria used in setting price were stated to be supply and demand (63.6%), the cost incurred (27.3%) and both cost incurred and supply and demand situations (9.1%). Probably this is due to the fact that, green beans have short post harvest life span, so regardless of the cost incurred, entrepreneurs may be compelled to sell them at any price before they deteriorate. Hence the supply and demand situations dominate the setting price. On the other hand, as green beans were highly demanded domestically, compensation of wastage of green beans incurred by sellers compelled them to sell at higher prices when the supply was low and demand was high.

4.6.2 Discounts on bulk purchasing/buying

When asked about the discounts given to those who buy in bulk, no one in the whole chain stated to have discounts in trading green beans. At the farm level, the contract specifies price regardless of the quantity traded. Unless if the company can be motivated to award a farmer who has done the best in producing green beans of high quality and preferred standards. However, this had never happened. In other nodes of the chain, customers used to buy only small quantities. Hence no discounts were given at any point along the chain of green beans production and marketing. This is different from other business activities where discounts become common feature of trading in large quantities. Therefore there was no sence of economies of scale in bulk

purchases. Probably, economies of scale in green beans marketing may be obtained in other aspects like management and transport but not in discounts for bulkiness.

4.6.3 Contracts in the production and marketing of green beans

The distribution of contracts among chain actors is presented in Table 14. Eight chain actors were found to have formal contracts in trading green beans, six had informal verbal contracts, two had informal written contracts and five had no contract of any kind. Chain actors who had formal contracts were farmers and exporting companies namely Serengeti Fresh and Gomba Estate, supermarkets and big hotels. Appendix 3 presents a sample of the contract between exporting companies and contracted farmers.

At the assembling, wholesaling and retailing nodes, contracts were either verbal or written but not legally binding hence, poor enforced contracts. Means of enforcement of the contract was found to be trustfulness among the trading partners at assembling, wholesaling and retailing nodes for green beans marketed locally. The reason for poor enforcement at those nodes was the nature of contracts (informal and verbal). When asked why they didn't have formal contracts they said it was risky to have such contracts with undefined market outlets.

It was found that only farmers supply green beans to their customers throughout the year. The peak months for the supply of green beans were mentioned to be March and October during the rain season. Lack of contracts resulted in irregular supply of green beans in the local markets. Those who supplied green beans throughout the year irrigated their farms during the dry season. Irrigation was accompaned with relay growing of green beans.

smallholders and wholesale markets. Now few large exporters dominate the industry due to lack of cooperatives/organizations to bulk and add value. In particular, this challenge for small farmers calls for formation of organisations for them to benefit, in a globalized environment that require high quality produce, continuity of supply and safety standards.

4.7 Storage facilities

Only 29.4% of the interviewed actors reported to have storage facilities, leaving 70.6% without storage facilities for green beans after harvest. Of those who had storage facilities, 40% reported to have refrigerated facilities and 60% had crates. Majority of those who did not possess storage facilities stated that expensiveness of facilities and small quantities traded were major reasons for not possessing storage facilities (Table 16). Most of chain actors at different nodes of the chain used open space as storage facility. When green beans were harvested or handled to different actors in the chain; they were placed in the open space on the floor to maintain freshness. Post harvest life span of green beans was estimated to range from about seven to ten days.

With lack of storage facilities, farmers make sure that communication with buyers is fast. Once harvested buyers come and immediately pick the produce. After harvest green beans are graded and put in crates to allow air circulation and maintain freshness (75%). If buyers do not come on time farmers have open floors on which they usually smear water to keep the produce cool. At other nodes of the chain, sacks were used as packing material for transport. In supermarkets and big hotels, green beans were stored in cold rooms.

Table 16: Reasons of not possessing storage facilities

Reasons	Frequency	Percent
They are expensive	3	37.5
Trading small quantities	2	25.0
They are expensive and trading small quantities	3	37.5
Total	**8**	**100.0**

4.8 Quality attributes

Quality attributes of green beans were stated differently among marketing agents. These attributes were: green beans should have dark green colour, straight shaped, fresh and immature. The distribution of respondents according to their quality criteria is presented in Table 17. When asked why green beans with dark green color were considered of high quality, respondents argued that, the dark green color indicates freshness and immature nature. If they loose freshness green beans usually turn yellowish. The exporting company mentioned minimal level of chemicals from pesticides applied in the green beans as the key quality factor. This is because; green beans were exported to European markets where levels of chemicals in foodstuffs are checked for the health of consumers. Big hotels and supermarkets added continuity of supply to be an important factor for a supplier to be accepted during the procurement. This finding is similar to that of ITF (2003) who found that, quality attributes of fruits and vegetables considered were: product freshness, levels of quantity and consistency of quality across the whole year. This observation calls for farmers and suppliers to accommodate seasonality of green beans production so that, they have reliable supplies. Accommodation of seasonality can be met by forming organizations which could coordinate time and quantity of green beans produced from each member of the organization.

Table 17: Quality attribute among market agents

Respondent	Straight and immature	Dark green and straight	Dark green, straight, fresh and immature	Fresh	Total
Farm supervisor	0	1	3	0	4
Assemblers	2	2	0	0	4
Wholesaler	2	1	3	2	8
Retailers	1	2	0	2	5
Total	5	6	6	4	21

4.9 Market information

At the farm level the major source of information was buyers of green beans. It was attributed by the distance at which green beans were sold (European markets). Farmers seek all the market information from exporting companies. This is because, the price was set based on the previous contract hence a new contract starts after comparison of costs incurred and gains obtained in the previous contract. Moreover green beans were exported to the European countries from which farmers get no information. Hence the only source of market information remains to be exporting companies.

At other nodes of the chain, market information had been obtained from assemblers, buying wholesalers and market surveys (Table 18). From assembling to local retailing point, sellers provided market information. This is because sellers had been in a better chance to know the situation from suppliers and buyers. But for big hotels and supermarkets, market information was obtained through market surveys usually conducted every three months. The major means of getting market information was by physical visit among small traders, use of mobile phones among wholesalers and contract specified between farmers and exporting companies.

Table 18: Sources of information to marketing actors

Source of market information	Farm supervisors	Wholesalers	Assemblers	Retailers	Total
Exporting companies	4	0	0	0	4
Buying wholesalers	0	0	3	0	3
Selling wholesalers	0	0	0	4	4
Assemblers	0	4	0	0	4
Market surveys	0	4	0	0	4
None response	0	0	1	1	2
Total	**4**	**8**	**4**	**5**	**21**

The market information that was important to green beans traders was found to be price of green beans (85.71%) and timelines of supplying the produce (14.29%). With the exception of farmers and suppliers to supermarkets, no one required information about amount demanded and quality standards. This indicated that, green beans were still not enough in Tanzania to necessitate asking about the amount and quality standards. Probably there is still less demand for quality standards by buyers.

Marketing agents were asked on the strategies set to obtain market information on time. Phoning frequently among wholesalers and visiting different markets among retailers were mentioned as the strategies used by chain actors.

4.10 Problems faced by marketing agents along the chain

4.10.1 Water scarcity and conflicts

Water scarcity was mentioned to be the main problem among farmers. Farm supervisors indicated this problem to be critical during the dry season. Demand for irrigation water was higher than water available. Farmers in Kilimanjaro claimed that Kilimanjaro Native Cooperative Union (KNCU) rented out too many acres of land, than they could provide water for. This situation frequently led to conflicts between

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(Table 19). Green beans marketing agents argued for production throughout the year if the business was to be done more profitably.

Table 19: Problems of marketing agents

Problem	Frequency	Percentage
Limited access to market information	3	27.3
Water scarcity	2	18.2
Seasonality of production	5	45.5
Pesticides and diseases	1	9.1
Total	**11**	**100.0**

4.10.4 Limited access to market information

Access to information of green beans marketing in the country was found to be limited. At the farm level, three out of four farmers had no information on prices at which their produce was exported. Farmers depended on the exporting company for prices stated in the contract. At other nodes of the chain, wholesalers relied on the assemblers' information since they usually communicated with assemblers by phone. However, they didn't know exactly what was going on at the market in the producing areas. Accompanied with this, retailers were found to rely on wholesalers' information, because they usually obtained green beans from the market. These findings are similar to those of Nyange, *et al.*, (2000) who found that, the flow of market information at farm level is still poor in Tanzania.

CHAPTER FIVE

CONCLUSION AND RECOMENDANTIONS

5.1 Conclusion

The study revealed that green beans production and marketing had three channels. These channels were: (1) farmers ⇒ exporting companies ⇒ European markets ⇒ consumers; (2) farmers ⇒ supermarkets ⇒ consumers; and (3) farmers ⇒ assemblers ⇒ wholesalers ⇒ retailers ⇒ consumers. Most of the green beans (87.9%) were sold through exporting companies, which have contracted farmers to grow green beans for European markets; about three percent were sold through supermarkets to local consumers and about 9% were sold through the local markets.

Wholesalers were found to have relatively high market power with average returns of 338 Tsh/kilogram of green beans traded and more access to market information than other chain actors. Overall market power was distributed in descending order as follows: wholesalers ⇒ retailers ⇒ farmers ⇒ assemblers.

There was no any form of organization among chain actors along the chain. However, different chain actors desired to have such organizations to increase their negotiation power. Most chain actors had no storage facilities. Green beans were stored in open spaces on the floor to keep them fresh. Quality attributes observed by marketing agents were: freshness, immaturity of pods, greenish colour and straightness of pods. Access to market information was found to be biased among chain actors with wholesalers having more access to market information than other chain actors. Wholesalers mostly used phones to obtain information about quantity supplied to the market.

Challenges identified by the study were: seasonal production of green beans, water scarcity, lack of organizations among chain actors, high incidence of diseases especially during the rain season and limited access to market information.

5.2 Recommendations

The following are recommendations geared towards improving green beans production and marketing.

i. High incidence of diseases was one of the problems facing green beans farmers especially during May and November. Control of these diseases was compounded by high prices of pesticides. It is recommended that farmers' groups or associations should be promoted. The groups or associations should be voluntary rather than mandatory through creating awareness about the benefits of such associations. Once the associations are formed, training on leadership and management should be coordinated because experience shows that failure of most farmer organizations or cooperatives is a result of poor management especially financial management. Besides the advantage of collective bargaining, associations can purchase the pesticides and fertilizers in bulky at discounted prices and sell them to farmers at reasonable price These associations would also increase negotiation power of farmers and traders in setting prices.

ii. Water scarcity was mentioned to be another problem facing green beans growers. The problem was indicated to be critical during the dry season when demand of water for irrigation was higher than water available. To improve water supply, rainwater harvesting for irrigation should be promoted. This

should be accompanied by imparting knowledge on the use of triple pump kind of irrigation to improve water use efficiency.

iii. Access to market information was found to be biased among chain actors with wholesalers having more access to market information than other chain actors. Improvement on the market information system should be done by promoting telecommunication infrastructure to increase the use of mobile phone in the rural areas and the use of Internet in the urban areas.

REFERENCE

Agona, J.A., Eboku, D., Kyamuhangire, W. and Oputa, J.N (Eds) (2005). *Value Addition for Small Scale and Agro-Processors Trainers' handbook.* African Institute for Capacity Development, JKUAT. Kenya. pp 120.

Arusha Region Social Economic Profile, (2000). Joint Publication by: The Planning Commission Dar es Salaam and Regional Commissioner's office. pp 265.

Ashimogo, G.C. (2004) Country Report from Dar es Salaam, Tanzania. "Developing Horticulture Supply Chains for Growth and Poverty Reduction in Sub Saharan Africa". A Distant learning coarse held at Tanzania Distant Learning Centre (TLDC) 24th – 29th April 2004.

Ashimogo, G.C. and Lazaro, E.A. (1989). "Vegetable Marketing in Mgeta, Morogoro District" Franco – Tanzanian Horticulture Development Project. Sokoine University of Agriculture. Morogoro, Tanzania.

Bhati, J. P. and Sigh, R. (1993). Changes in Population, Labour Force and Land Use in Himachal Pradesh: A Strategy for Sustainable Agricultural Development in Hilly Areas. Bihar - *Journal of Agricultural Marketing.* Vol 1 (3) 329-328.

Blair, B., Keneth, L. Kusmer, D. and Gaston, J. K. (2004). French Beans and Food Scares.

http://www.oup.com/us/catalog/general/subject/FoodWine/eHI9MTA9mcGY9

MCZzcz1hdXRob3IuYXNjJnNmPWFsbCZzZD1hc2Mmdmlldz11c2EmY2k9MDE5NTE2OTYxMQ= site visited on 20/05/2005.

Boyd, H. K, westfa, R. and S.F. Skuras (1981). *Marketing Research, Texts and Cases.* Richard, D. Publisher. Illinois, USA. 788pp.

Cagatay, N., Elson, D. and Grown, C. (1995). Gender and Macroeconomics, Special Issue of World Development, Vol. 23 (11). http://www.bridge.ids.ac.ok/dgb6.html site visited on 15/02/2006.

Casley, D.J. and Kumar, K. (1998). *The Collection, Analysis and Use of Monitoring and Evaluation Data.* The International Bank of Reconstruction and Development Washington D.C. pp 102.

Clay, K. (1993). Trade, Institutions, and the Law: The experience of Mexican California. Stanford University, Stanford, Calif. Mimeo. pp 237

Deaton, A. (1997). The Analysis of Household Survey. In; *A Micro econometric Approach to Development Policy.* "edited by" [Kean, L.G., Gujarati, D.C. and Fowler, F.J.]. The Johns Hopkins University Press, Baltimore and London. pp 7-33.

Dicken, P. (1998). Global Shift: Transforming the World Economy. London: Paul Chapman (third edn). pp 342.

Dolan, C. and Humphrey, J. (2000). Governance and Trade in Fresh Vegetables: The Impact of UK Supermarkets on the African Fresh Vegetable Industry. *Journal of Development Studies* Vol. 37 (2) 147 – 177.

Douglass C. North (2003). 'Institutions' *The Journal of Economic Perspectives*, volume 5 (1). (Winter, 1991), pp. 97-112.

Fafchamps, M. (1996). Market Emergence, trust, and reputation. Stanford University, Stanford, Calif, Mimeo. pp 582.

Fafchamps, M and B. Minten (1999). Returns to social capital among traders. IFPRI MSSD Discussion Paper No. 23 International Food Policy Research Institute, Washington D.C.

FAO SDD (1996) Women. Agriculture and Rural Development. http://www.fao.waicent/faoinfo/Wpdirect/Wpre0010.htm site visited on 28/6/2005.

Fowler, F.J., Jr. (1993). Survey Research Methods. Second Edition. SAGE Publications, inc. California. pp 156.

Friedland, W., Barton, A., and Thomas, R. (1981). *Manufacturing green gold: capital, labor, and technology in the lettuce industry.* New York: Cambridge University Press. pp 415.

George Mateljan Foundation (2005). The World healthiest food. http://www.whfoods.com/genpage.php?tname=foodspices&dbid=134 site visited on 17/05/2005.

Gereffi, G., M. Korzeniewicz and Korzeniwics, R. (1994). Introduction: Global Commodity Chains. In; Commodity Chain and Global Capitalism "edited by" [Gereffi, G. and M. Korzeniewicz] Praeger, Westport, CT: Greenwood Press. pp 1-14.

Gibbon, P. (2001). Agro-Commodity Chains: An Introduction. IDS Bulletin Vol. 32 (3). 99 pp.

Gichuki Kranjac-Berisalvic, T.B. Bayorbor and F.K. Obeng (2002). Soil and Water Conservation in Ghana. Proceeding of Rethinking Natural Resource Degradation in Sub Saharan Africa: volume 1. Water Efficiency Agency, Ghana. pp 482.

Govindasamy, R.; Italia, J. and Adelaja, A. (2002). Farmers' Markets: Consumer Trends, Preferences, and Characteristics. http://216.239.39.104/search?q=cache:BQHDIljRRSIJ:www.joe.org joe/2002february/rb6.html+Beans+consumption+preference+questions&hl=en site visited on 16.11.2004.

Hopkins, T.K. and Wallerstein, I. (1986). Commodity chains in the world economy prior to 1800. *Economic Review* 10: 157-170.

Hopkins, T.K. and Wallerstein, I. (1994). Commodity chains: construct and research. In; Gereffi, G. and Korzeniewicz, M. eds. *Commodity chains and global capitalism*. Westport, CT: Greenwood Press. pp.17-20.

IFPRI (2003). Market Institution, Transaction Costs and Social Capital in the Ethiopian Grain Market. Eds (Mudhin, E.Z.G). Research Report 124. pp 93.

Imperial College of Science, Technology and Medicine (2002). Tanzania country reports on the horticulture sector. http://www.wye.ic.ac.uk/AgEcon/R7151/tanzania.html web visited on 10/6/2004 1241hrs. FAO (1999). Production Year Book. FAO, Rome.

ITF (2003). Value Chain Analysis: A Strategy to increase Export earnings. International trade forum – issue 1/2003. Pp 8-16. http://www.tradeforum.org/news/fullstory.php/aid/529 visited on 30/05/2005.

Kaul, G. L. (1997). "Horticulture in India – Production, Marketing and Processing". *Indian Journal of Agricultural Economics* vol. 52.(3). pp 561 – 573.

Kashuliza, A. K., Hella, J. P., Maerere, L.B. Silomba, L.B. and Mhinte, A. (2000). Marketing of Horticultural Produce in Tanzania: Result of a Field Study in Iringa, Morogoro and Dar es Salaam. A report prepared for the horticulture project planning held at Sokoine University of Agriculture (SUA), Morogoro, 23rd –24th September, 2000.

Kilimanjaro Regional Social Economical Profile (2002). Joint Publication by: National Bureau of Statistics (NBS) and Kilimanjaro Regional Commissioner's office: Coordinated by: The President's office Planning and Privatization. Dar es Salaam. pp 235.

Kitule, Z. (1999). Development and Marketing of Horticultural Products. National Consultant on Horticultural Development and Marketing. (Project No. URT/97/004).

Lynch, K. and Ashimogo, G. C. (2000). Overcoming Informational Constraints: Improving Horticultural Marketing and Technical Information Flows to Smallholders. Wye College, University of London.

Mbelwa, R.J. (1999). Market Review of Horticulture. Policy and Planning Department Agricultural Information Services, Dar es Salaam.

Ministry of Agriculture and Food Security, (2002). Horticultural Production Statistics. Compiled from 13 horticulture-producing regions.

Ministry of Agriculture and Food Security, Food Security Department (Meteorological Unit). (2005). Rainfall Distribution and Irrigation. http://www.agriculture.go.tz/MAFS-Services/Statistics.htm visited on 3/8/2006.

Mlambiti, M. (1975). Structural Patterns in the Marketing of Selected Fruits and Vegetables in Morogoro District. The Place of Cooperatives in Marketing.

Department of rural Economy and Extension. Faculty of Agriculture and Forestry, University of Dar es Salaam, Tanzania. pp 59.

Mudhin, E. G. (2004). Successes and Challenges of Horticulture in Africa. On the Distance Learning Seminar held on April 26th – 29th, 2004 concerning Developing Horticulture Supply Chains for Growth and Poverty Reduction in Sub Saharan Africa. pp 1 - 4.

North, Douglass C. (1990). Institutions, institutional change and economic performance. Cambridge: Cambridge University Press. pp 211.

North, D. C. and Thomas R. (1973). The rise of the western world: A new economic history. Cambridge: Cambridge University Press. pp 156.

Nyange, D.; Duma, T. and Temu, A. E. (2000). Fresh Fruit Marketing in Tanzania: Prospectus for International Marketing. In: Food and Agriculture Organization of the United Nations. Project GCCP RAF/238/JPN. *Cases and Research in Agribusiness* Vol. 2. pp 201 – 235.

Plateau, J.P (1994). Behind the Market Stage Where Real Societies Exist, Part 1. the Role of Moral Norms. *Journal of Development Studies*. Vol. 30 (4): 753 – 815.

Population and Housing Census (2002). Tanzania Census 24thAugust – 4th September, 2002. District Profiles of Temeke, Kinondoni and Ilala; Central Census Office, National Bureau of Statistics, President Office, Planning and Privatisation. Dar es Salaam. Vol. 4. pp 118.

Porter, M. (1990). The Competitive advantage of Nations, London: Macmillan. pp 98.

Roeckel Van, J.R. Kopick, C.J.E. Broekmans and D.M. Boselie (2000). Building Agri Supply Chains :Issues and Guidelines. In: A guide to developing agricultural markets and Agro enterprises, "edited by" [D. Giovannucci. and S. Hertogenbosch] The Netherlands: Agri. Chain Competence. pp 37 – 62.

Salum, S. (2002). A Study of the Factors Influencing the Marketing Efficiency of Fresh Fruits and Vegetables in Morogoro Municipality and Morogoro Rural. A Special Project Submitted in Partial Fulfilments of the Requirements for the Degree of Bachelor of Science in Agricultural Economics and Agribusiness of Sokoine University of Agriculture. pp 48.

Segre, A. (1998). Global Horticultural Impact: Fruits and Vegetables in Developing Countries. In: The World Conference on Horticultural Research; held on 17 - 20 June 1998 in Rome, Italy. pp 18.

Shafii, H. (2003). Marketing and Value Chain Analysis of Vegetables: a Case Study of Mgeta and Nyandira villages in Morogoro Rural District. A special Project submitted in partial fulfilment of the requirements of the degree of the Bachelor of Science in Agricultural Economics and Agribusiness of Sokoine University of Agriculture. pp 62.

Steven, S. (2000). Strengthening Partnership in Agricultural Research for Development in the Context of Globlization. In GFAR (2000), Keynote Address

on International Cooperation on Commodity Chains. http://www.egfar.org site visited on 30/05/2005.

Sydney Market Limited (2002). Welcome to the World of Beans. http://www.soupsong.com/fbeans.html site visited on 20/05/2005.

Wallerstein, I. 1974. *The modern world system*. New York: Academic Press.

Weatherspoon, D.D. and Reardon, T. (2003). The Rise of Supermarkets in Africa: Implications for Agrifood Systems and the Rural Poor. Development Policy Review, 2003, May, 21 (3). Pp 1-17.

William M.K. T. (2002). Non-probability Sampling. http://www.socialresearchmethods.net/kb/sampnon.htm visited on 3/08/2006.

World Health Organization (WHO) (1992). Micro nutrient deficiency information system-iodine and vitamin A. Nutrition unit. Geneva, Switzerland.

World Bank (1994). Tanzania: Agriculture. A Joint Study by the Government of Tanzania and the World Bank, Washington D.C. pp 244.

APPENDICES

Appendix 1: Checklist for supermarkets and restaurants as large buyers of green beans

1. Name of the trading company _____
2. Village/street _____
3. Ward _____
4. District _____
5. Region _____
6. Age of the trading company (since it was started) _____
7. Legal ownership of the company
   1 Sole proprietorship
   2 Partnership
   3 Corporation
   4 Others (specify)
8. Please fill the following table regards your green beans sources distribution (per month)

Crop	Quantity of green beans imported (kg)	Unit buying price (Tsh kg)	Quantity produced domestically (kg)	Unit buying price (Tsh/kg)	Domestically produced green beans selling price (Tsh/kg)	Imported green beans selling price (Tsh/kg)

9. What are criteria used to procure green beans?
10. What are reasons for your company to import green beans?
11. Which countries do you import green beans from
12. Do you have any contractual terms with local suppliers?
13. If yes, what are they?

14. What are terms and conditions for buying green beans?

15. What problems do you face in the marketing of green beans?

16. What do you suggest to be done to harness the situation?

Appendix 2: Farmers' and traders' questionnaire

TITLE: EXAMINATION OF SUPPLY CHAIN FOR DOMESTICALLY MARKETED GREEN BEANS IN TANZANIA: A CASE STUDY OF ARUSHA, KILIMANJARO AND DAR ES SALAAM.

I: General information

1. Name of respondent _____
2. Village/street _____
3. Ward _____
4. District _____
5. Region _____
6. Age of respondent _____
7. Type of trade you perform
   - 1 Assembling
   - 2 Wholesale trade
   - 3 Retail trade
   - 4 Others (specify)
8. Sex of respondent
   - 1 Male
   - 2 Female
9. Marital status of the respondent
   - 1 Single
   - 2 Married
   - 3 Widowed
   - 4 Divorced

5 Others (specify)

10. Education of respondent (years in school) _____

11. Occupation of respondent

1 Government employee

2 Private employee

3 Self employee

4 Business man

5 Others (specify)

12. What other horticultural crops do you grow along with green beans?

_____

II: Storage facilities and quality maintenance

13. Do you have any storage facilities of green beans?

1 Yes

2 No

14. If yes, what are these storage facilities?

1 Refrigerated facilities

2 Tenga

3 Crates

4 Others (specify)

15. If no, why?

_____

_____

_____

_____

16. What are criteria used in sorting and grading green beans?

_____

_____

_____

_____

17. What do you do to assure that the quality of green beans is maintained?

_____

_____

_____

_____

_____

III: Production and trading pattern

18. Do you supply green beans through out the year?

    1 Yes

    2 No

19. If no, which months in a year you usually supply to your customer?

_____

_____

20. What is the peak month of the green beans? _____

21. What do you do to ensure constant supply of green beans?

    1 Irrigate

    2 Buy from others

    3 Practicing relay planting

    4 Others (specify)

A: FARMERS' INFORMATION

22. Please fill the following table concerning the harvest information for an acre of land

Crop	Quantity harvested (kg)	Quantity consumed (kg)	Quantity deteriorated (kg)	Quantity sold (kg)	Market (where sold)	Distance to the market (km)	Unit selling price (Tsh/kg)

Market (where sold)

1 Direct to consumers

2 Serengeti fresh

3 Gomba estate

4 Assemblers

5 Others (specify)

NB: 1 tenga = _____ kg

1 lumbesa = _____ kg

1 tin = _____ kg

23. Please fill the following table on the cost incurred

Crop	Labour cost (Tsh/acre)	Pesticide costs (Tsh/acre)	Fertilizer cost (Tsh/acre)	Renting costs (Tsh/acre)	Total cost incurred (Tsh/acre)

24. Mode of delivery

1 Farmers deliver green beans to buyers

2 Buyers collect green beans from farmers

3 Others (specify)

B: TRADERS' INFORMATION

25. Where do you get green beans?

1 From farmers

2 From assemblers

3 Others (specify)

26. What is the means of transport?

1 Head load

2 Bicycle

3 Wheel barrow

4 Truck

5 Others (specify)

27. Please fill the following table on your trading pattern per week

Crop	Quantity bought (kg)	Unit buying price (Tsh/kg)	Distance to the market (km)	Per unit cost of transport	Labour cost	Storage cost

IV: Marketing information

28. Where do you get marketing information?

1 From traders

2 From neighbours

3 From friends and relatives

4 Radio broadcasting

5 Internet

6 Magazines

7 Others (specify)

29. How do you get this information?

1 By physical visit

2 By asking traders who come to buy

3 By listening to radios and watching televisions

4 By reading magazines

5 By the use of fixed telephone

6 By the use of mobile phone

7 Others (specify)

30. 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 Others (specify)

31. Do you incur any cost to acquire that information?

1 Yes

2 No

32. If yes, how much (Tsh)?

_____

_____

33. What strategies do you set to have always this information on time?

_____

_____

V: Chain actors' relationship

34. Who set price of green beans?

1 Farmers

2 Assemblers

3 Wholesalers

4 Retailers

5 Others (specify)

35. What are criteria used in setting price?

1 Cost incurred

2 Supply and demand situation

3 Others (specify)

36. Do you give discounts to those who buy in bulk?

1 Yes

2 No

37. If yes, please fill the following table

Quantity sold (kg)	Discount given (%)	Market (to whom it was sold) 1 Consumers 2 Retailers 3 Wholesalers 4 Others (specify)

38. Do you usually sell to specific customers?

1 Yes

2 No

39. If yes, what is the relationship between you and him her?

1 My relative

2 My friend

3 Officemate

4 Others (specify)

40. Why do you usually sell to him/her?

1 Credit advancement

2 Trustful person

3 Always pay in cash

4 Others (specify)

41. Do you have any contractual arrangements with buyers/sellers of green beans traded?

1 Yes

2 No

42. If yes please fill the following table on the terms and conditions of sale

Crop	Amount sold	Terms of payment 1 On cash 2 On credit 3 Others (specify)	How contract is enforced? 1 Law 2 Trustfulness 3 Others (specify)	Transaction cost (Tsh)

43. Do you have any farmer group?

1 Yes

2 No

44. If yes, what is the name of your farmer group?

_____

_____

_____

45. Do you usually bulk your produce and sell to customers as farmers' group?

1 Yes

2 No

46. What are other advantages of joining to farmers group?

_____

_____

_____

_____

_____

47. What problems do you face in the marketing of green beans?

_____

_____

_____

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

_____

_____

_____

49. What is your future prospects regarding farming/marketing of green beans?

_____

_____

_____

_____

Thanks for your cooperation and stay blessed

Appendix 3: Sample of a contract between farmers and exporting companies of green beans

A: GENERAL

1. Farmers of village ..... (the farmers) wish to grow green beans and Company .....(the Company) to promote and buy their production and market it overseas.
2. This contract specifies the terms and conditions under which farmers will grow green beans and the Company will promote, purchase, process and market them.

B: THE COMPANY AGREES

1. To measure and assess the suitability of the plot proposed by the farmer for planting green beans
2. To provide high quality seed to the farmer in good time for planting, in the quantity required for planting the accepted area of land
3. To supply on cash payment (or on credit once the farmer has qualified as an established and reliable contract grower) the type and quantity of fertilizers and agro chemicals required for the area of green beans planted by the farmer
4. To advise the farmer on all technical aspects of growing green beans
5. To buy all green beans of acceptable quality grown by the farmer, for a price announced at the start of each growing season. The quality requirements will be described in schedule 1
6. To pay the farmer his/her dues as described in part D

C: THE FARMER AGREES:

1. To use the part of his/her farm that has been surveyed and approved by the Company, for the purpose of growing green beans for the duration of this agreement
2. To plant the bean seeds supplied by the Company on this land, on the dates and following the procedures advised by the Company
3. To follow all technical recommendations made by the Company with regard to planting, irrigating, weeding, fertilizing, controlling pests and diseases, picking, sorting and packing green beans
4. To sell all green beans of acceptable quality grown on the farm to the Company, for the price and following the procedure outlined in section D below
5. To become a member of ..... Farmers' Group, and to contribute to the maintenance of common facilities for irrigation, input distribution, sorting, packing etc as agreed by the group.

D: PAYMENT FOR GREEN BEANS AND PRODUCTION INPUTS SHALL BE DETERMINED AS FOLLOWS:

1. The base price at which each grade of green beans will be bought will be announced by the Company at least one month before the start of each planting season
2. The prices at which fertilizers and agro chemicals will be sold will be announced at the same time, but may fluctuate during the year in line with exchange rate fluctuations
3. Payment for green beans delivered each month, less the cost of fertilizers and agro chemicals taken on credit, will be made before the 15th day of the following month.

E: PENALTIES AND BONUSES:

1. If the Farmer delivers green beans that do not meet the agreed quality standards, the Company will reject them. The Farmer may re submit them after sorting, but the Company is under no obligation to accept beans that do not meet the standards
2. If the Farmer fails to follow the procedures detailed in this agreement, he/she will be warned verbally and in writing. After three written warnings the Company has the right to terminate the agreement
3. If the Company fails to fulfil its commitments as detailed in section B above, the Farmer has the right to claim compensation to the value of the services foregone or to the value of the crop lost, at rates agreed between the Company and the Farmers' Group.
4. If the Farmer delivers green beans that exceed the required quality standards or the expected level of production, he/she shall be eligible for a bonus payment at a level agreed between the Company and the Farmers' Group

F: DURATION OF AGREEMENT

1. This agreement will last for one growing season from the date of signing to the end of the economic harvest of the green bean crop
2. If both parties are satisfied with the outcome of the agreement it may be renewed for a further season, but there is no obligation on either party to renew the agreement.

G: DISPUTE SETTLEMENT

1. Any dispute arising as a result of this agreement will be settles wherever possible by discussion between the Company, Farmers' Group and the Farmer

2. Any dispute that cannot be settled by this process will be referred to an independent arbiter acceptable to all the parties involved.

H: SIGNATURE

I have read and understood the contents of this agreement and I sign it of my own free will

_____ (Farmer)

_____ (Company)

_____ (Witness)

_____ (Date)

SCHEDULE 1: GRADES AND QUALITY REQUIREMENTS OF GREEN BEANS

A: GRADE SPECIFICATION

1. Grade 1 beans (extra fine) are from 6.5 – 9.5 cm in length
2. Grade 2 bean (fine) are from 9.5 – 11.0 cm in length
3. No other sizes will be accepted.

B: QUALITY REQUIREMENTS: acceptable beans must be: -

1. Free from pests, wounds, scars and bruises
2. Free from mud, dust or other debris
3. Not broken or damaged in any manner
4. Not bent
5. Picked with the remains of the calyx intact
6. Fresh and not pre wilted by sunburn or other sources of heat
7. Naturally green, not tainted by disease, smoke etc.