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DEDICATION

To my husband Daniel Naku Wandera and my son Alvin Wandera,

My brothers and sisters,

To my parents

Januarius Rogath and Ester Rogath

For giving me education and be caring.

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ABREVIATIONS

DALDO	District Agricultural and Livestock Development Officer
BS	Bureau of Statistics
ESRF	Economic and Social Research Foundation
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product.
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IFAD	International Fund for Agricultural Development
IIRR	International Institute of Rural Reconstruction
ITC	International Trade Centre
IMF	International Monetary Fund
KIT	Royal Tropical Institute
MA	Ministry of Agriculture
SARI	Selian Agricultural Research Institute
TCT	Transaction Cost Theory
TCA	Transaction Cost Analysis
UNCTAD	United Nations Conference on Trade and Development
USAID	Us Agency for International Development
UN	United Nations
WB	World Bank

ABSTRACT

In developing countries, it has been observed that Gross Domestic Product GDP growth from agriculture benefits the incomes of poor people two to four times more than any other sectors of the economy. About 75% of the world's poor people live in rural areas and most of them are involved in farming (Asenso-Okyere, Davis, and Aredo, 2008). Smallholder producers in developing countries increasingly seek to participate in global markets. (Stanton and Burkink, 2008). Removal of trade barriers due to liberalization has open windows for smallholder farmers to access the market, but they still face challenges. The positivity and negativity of globalization have been experienced at a number of different levels i.e. the individual, the household, the firm, the town, the region, the sector and the nation.

Based on the challenges the farmers are getting, with the use of transaction cost theory this study mainly seeks to analyze the value chain of pigeonpea in Tanzania for better policy making, to improve their market access so as to improve production and reduce poverty. To attain the main objective of this study, mapping the value chain and analysing the existing performance in terms of price, cost and profit from the source to the downstream of the value chain was done.

The results shows that, the type of marketing system used is not direct marketing system although there is one group of company (marketer) doing direct marketing by having arrangement with farmers and buying from them. The common market system involves many links with no value addition within the channels which increase the total cost through double handling. Farmers sell pigeonpea individually which increase the transaction cost such as seller/buyer search cost. In all the two systems, there is lack of market information by farmers in upstream and control of big buyers in downstream making farmers to have low bargaining power. This is due to all the amount of pigeonpea from the upstream of the value chain being bought by the urban exporters. Since the middlemen have direct contact with exporters, they know the quality required, they act opportunistically towards the farmers and enjoy profit by buying at low price with no value addition. Also there is lack of capital which constraints participants in the value chain which is caused by lack of knowledge and collateral to get loans. Another issue is of gender participation in this business, for dry pigeonpea men are involved and green pigeonpea is the women business. The involvement of women in dry pigeonpea business is restricted by lack of capital.

CHAPTER 1
INTRODUCTION

1.0 Background Information

In developing countries, Gross Domestic Product (GDP) growth from agriculture benefits the incomes of poor people two to four times more than any other sectors of the economy. About 75% of the world's poor people live in rural areas and most of them are involved in farming (Asenso-Okyere, Davis, and Aredo, 2008). In Africa agricultural smallholder producers are the basis for development. They make majority of the population and account for large share of GDP and export earnings (Warner and Campbell, 2000). Smallholder producers in developing countries increasingly seek to participate in global markets. This participation is an important driver of economic and social progress throughout the developing world (Stanton and Burkink, 2008).

When smallholder farmers enter global markets, they face stiff competition. In order for them to compete and benefit from agriculture they have to produce at the required time, the required quality and quantity and market their products at a competitive price. Therefore much attention has to be paid to production and marketing of agricultural products in terms of reducing cost in the value chain while maintaining the quality of the products they produce. For generations, agriculture policies in developing and developed countries have been extremely disparate, with developed countries subsidizing agriculture while developing countries have imposed relatively high tax especially on agricultural exports. This caused depress over-production of agricultural commodities in developed countries while in developing countries agricultural productivity stagnated and increasing failed to feed their own population. In recent years, policies have started changing, with developed countries reducing their agricultural subsidies and opening up the markets by removing trade barriers.

Commodity market liberalization can improve incentives for production of export crops by reducing the total costs of transforming products through space, form and time, or by reducing the costs of arranging and completing transactions (Nelson and Temu, 2002). Removal of trade barriers due to liberalization has open windows for smallholder farmers to access the market, but they still face challenges. These challenges include high transaction cost and asymmetric information, low access to capital and high production risk. Moreover, smallholder farmers are disorganized, practice traditional subsistence farming and depend on the rain fed agriculture. Due to these challenges they do not use the opportunity available.

The positivity and negativity of globalization have been experienced at a number of different levels i.e. the individual, the household, the firm, the town, the region, the sector and the nation. At the sectoral level liberalization of domestic agricultural markets and the effects of globalization provided new opportunities that could benefit poor farmers, but for this to happen priority needs to be given to interventions that improve the competitiveness of smallholder farmers (International Fund for Agricultural Development (IFAD), 2001) because only trade liberalization will not bring the expected benefits when agricultural markets do not function competitively.

The long-term marginalization of agriculture in Africa since independence has left the sector fragmented, and poorly equipped to take advantage of recent policy reforms that would permit efficient use of international competitiveness. Smallholder farmers face high transaction costs and uncertainty arising from missing or incomplete input and product markets, high access barriers and costs of information, and other market imperfections that restrict market access (Jones, Freeman and Monaco, 2002). Policy makers face the challenge of determining and fostering the most productive roles for public, private, and non-governmental organizations in supporting African farmers, traders and agribusinesses (Eicher, 1999). Only working together can these actors establish the institutional relationships that can provide and facilitate smallholder farmers to develop a competitive advantage in international markets (Jones, Freeman and Monaco, 2002). According to Kaplinsky (2000), the issue is not to participate in the global economy but how to do it in a manner which provides sustainable and equitable income growth.

Improving the agriculture value chain in developing world can make an important contribution to increasing incomes and reducing poverty by enabling smallholder farmers to use the opportunity available for improving the marketing of their produce.

1.2 Statement of the Problem

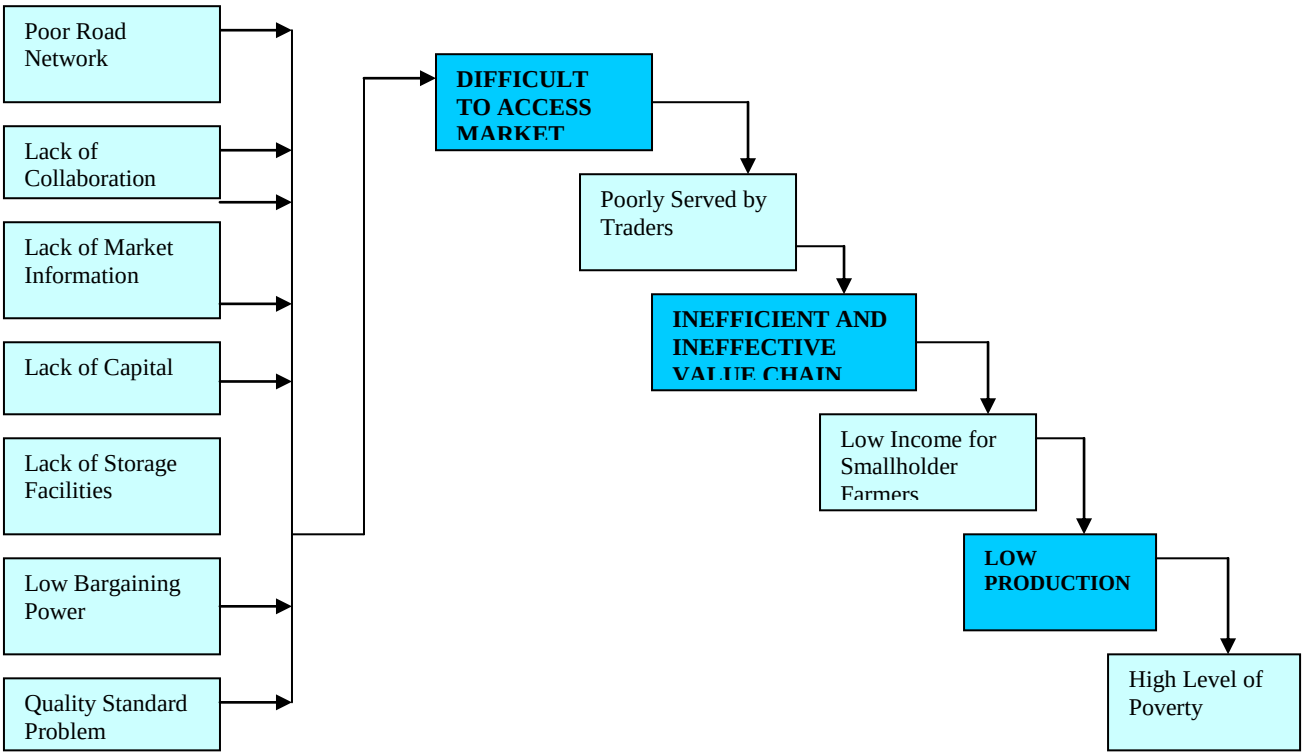
Many countries in sub-Saharan Africa have liberalized markets to improve efficiency and enhance market linkages for smallholder farmers. However, market access has persisted to be the constrained. According to Shiferaw, Obare, and Muricho (2006), the functioning of the market is constrained by high transaction costs and coordination problems along the product to consumer value chain. However, little has been done by the governments of developing countries to assist smallholder farmers to become important players in local and export markets. This study will therefore focus on an analysis of the value chain for pigeonpea, a lucrative export crop, in Tanzania to improve production and reduce poverty.

1.3 Justification of the Study

Value chain problems facing small holder farmers are observed by different authors. Shiferaw, et al., (2006) identify value chain problems such as poor roads and high transportation costs due to the remoteness of the farms from the markets, poor communication systems that hamper access to market information and limit development of markets. Smallholder farmers are also poorly served by traders, and crop prices vary by season, falling during the time of harvest and increasing when the supply declines. Finally, there is low local effective demand for agricultural products.

In addition to the noted problems above Nadvi, (2008) point out an array of distinct product and process standards that they must meet that exclude farmers from profitable market opportunities, because it heightens their competitive challenges. Due to a lack of access to storage facilities, smallholder farmers are poorly served by small traders, making local market thin and less competitive. Lack of competition and low local effective demand limits opportunity for farmers to bargain for better prices which makes them accept low prices for their produce.

Figure 1.1 Smallholder Farmers' Problems and their Effects on the Value Chain



Source: Own Construct, (2009)

Tanzania is among the world's poorest countries, with a per-capita annual income of about US$280, with agriculture playing a dominant economic role, accounting for nearly three-quarters of merchandise, 45-50% of GDP and employing around 70% of the labor force, especially in rural areas**.**

In Tanzania agriculture is the foundation of the economy. It is dominated by smallholder farmers (peasants) cultivating farms with average sizes of between 0.9 hectares and 3.0 hectares each practicing rain fed agriculture. It accounts for about half the national income, three quarters of merchandise exports and is source of food and provides employment opportunities to about 80% of Tanzanians[1]. Due to the failure of marketing their produce, farmers instead concentrate on subsistence farming. This increases the level of poverty since a majority of the population is employed in this sector.

According to statistics from the Tanzania national website, agricultural GDP for export crops has grown at a rate of 5.4 per year since 1985. This performance is below 6.0-7.5 which is

[1] http://tanzania.go.tz/agriculture.html accessed 3/10/2010**;**
http//www.nationencyclopedia.com/economies/Africa/Tanzania-AGRICULTURE, accessed 3/10/2010

needed to reach the 2010 objective of poverty reduction[2]. Statistics show that, over 75% of the rural population characterizes by smallholder farmers who are disorganized (Asenso-Okyere, Davis, and Aredo, 2008). This therefore entails that, the standard of living of the majority in the rural areas can be improved by giving more attention to how to improve the agricultural value chain and enable farmers to use the market opportunities available.

1.4 Historical Perspective of Pigeonpea in Tanzania

Pigeonpea (*Cajanus Cajan*) was introduced in northern region of Tanzania in the 1950s and 60s. (Technoserve - TA & ICRISAT/SARI, 1990's) It is one of the most important legumes produced by smallholder farmers as a cash crop. Also, it allows farmers to earn incomes from utilization of the residual moisture after the cereal crop has been harvested (Shiferaw, Silim, Muricho, Audi, Mligo, Lyimo, You and Christiansen, 2005)

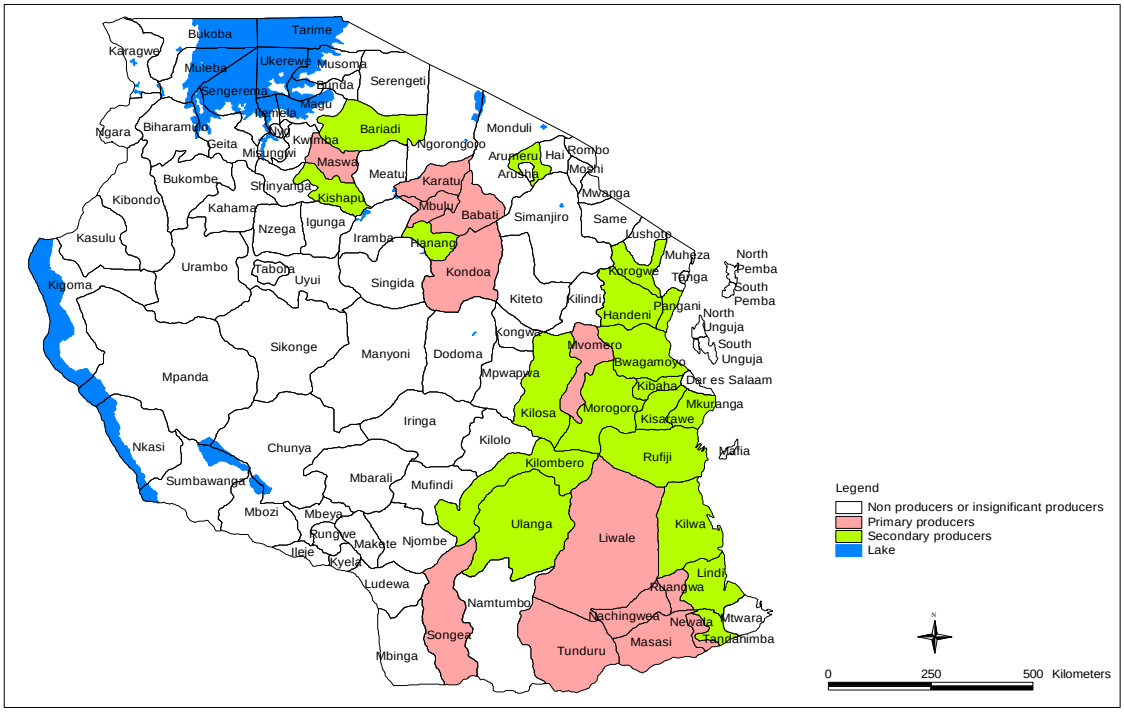
Pigeonpea is an important crop in the smallholder production systems of several countries in eastern and southern Africa, mainly Tanzania, Uganda, Kenya, Malawi and Mozambique (Shiferaw, et al., 2005). It is a drought-tolerant crop grown in many semi-arid and drought prone areas in the region. It is a nutritious legume, which is a cheap source of protein for many poor families. It is also a nitrogen-fixing legume, which has the potential to enrich soil fertility, and can be grown by cash-constrained farmers without the application of fertilizers. It is commonly grown as an intercrop with cereals (maize, sorghum and finger millet) in densely cultivated areas where land is scarce (Shiferaw, et al., 2005). The crop offers multiple benefits – protein rich seed (approximately 21% protein), fuel, fodder, and fencing material, improved soil fertility and erosion control. It ranks third among the pulses (after beans and cowpea) in total national production in Tanzania (Mlingo, 1994). According to FAO statistics, pigeonpea accounted for about 11% of the total annual production of pulses in the country between 1992 and 2000 (Shiferaw, et al., 2005). DALDO's office provides that, from 1998 to 2007 pigeonpea production was leading by far chickpeas and groundnuts production in Babati.

[2] http://tanzania.go.tz/agriculture.html 3/10/2010

1.4.1 Major Growing Areas of Pigeonpea in Tanzania

The crop is grown in several parts of the country. The major growing areas are Lindi and Mtwara Regions in the Southern Zone; Kilimanjaro, Arusha and Manyara Regions in the Northern Zone; and Shinyanga Region in the Lake Zone. The crop is also important along the coast, Dar es Salaam, Tanga and in Morogoro Regions in the Eastern Zone where it is used mainly as a vegetable (green peas). About 14 districts in these major producing regions are primary producers mainly located in the Southern and Northern Zones of the country. However a number of the districts along the Coastal Zone also grow pigeonpea though not intensively. In the primary producing districts, pigeonpea is mainly harvested and consumed or sold as dry grain while it is mainly harvested at green stage and consumed as a vegetable (green peas) in the secondary production areas. In the Northern Zone districts including Babati, pigeonpea is mainly grown as a cash crop (Shiferaw, et al., 2005).

Map 1.1 Pigeonpea Growing Areas in Tanzania



Source: Shiferaw, et al., (2005)

Babati district which has a total area of 607,000 ha is the major grower of Pigeonpea in Arusha region, with Mamire, Gallapo, Riroda, Babati, Nangara and Dareda divisions as the main areas. Hanang District follows as a distant second. In Babati about 80% of all farmers

grow pigeon peas, mainly intercropped with maize. (Technoserve - TA & ICRISAT/SARI, 1990's).

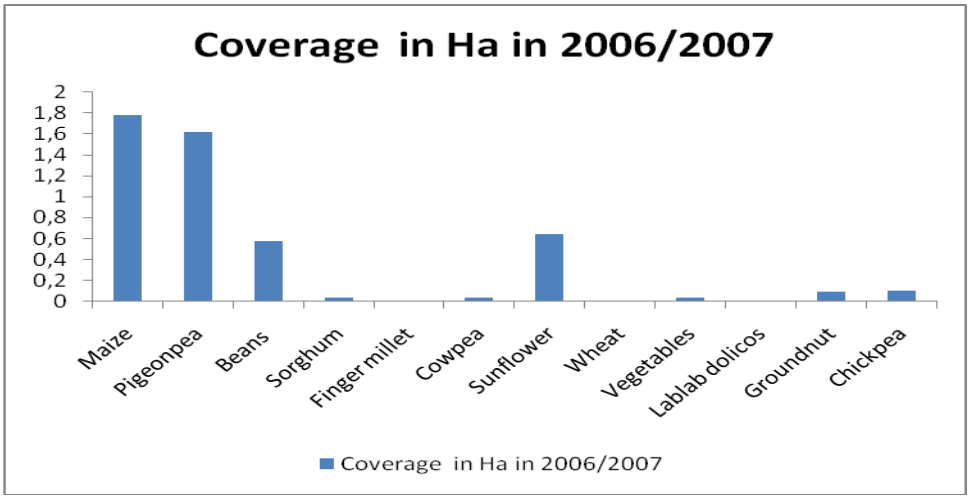
1.4.2 Pigeonpea Production and Practices

Pigeonpea in Tanzania is growing with intercropping with cereals such as sorghum, millet and maize other crops like maize. It can be categorizes into three groups depending on the growing periods i.e. Short term duration which takes 100-120 days, medium term duration which takes 150-200 days and long term duration which takes more than 220 days (Jones, Freeman and Monaco, 2002). In Tanzania the most varieties grown by farmers are medium to late flowering types (>150 days), although extra-early flowering cultivars are now available (Mlingo and Craufurd, 2005)

Like other legumes, pigeonpea is susceptible to damage from insect pests which occur mainly during the flowering and podding stages in the field, and later in storage. Based on this problem and others such as long term maturity, climatic condition since farmers depend on rain fed agriculture. International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and Selian Agricultural Research Institute (SARI) did a research on how to deal with farmers problems by finding the suitable seeds to help famers to improve production. In 1990's ICRISAT in collaboration with SARI provide the answer to the farmers on their problems and came up improved pigeonpea seed which is resistance to drought and weevil damage.

According to reports from the baseline survey for TL II and treasure legumes projects in Tanzania, pigeonpea crop is the major crop produced in Babati after maize (see figure 1.2) taking into consideration of area used for production compared to other crops grown in the area.

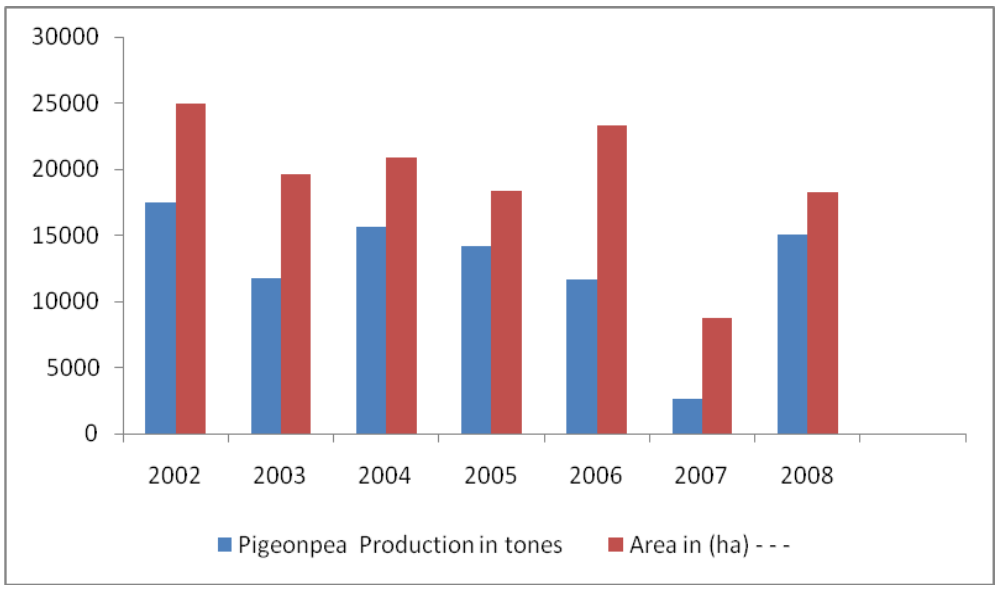
Figure 1.2 Area Covered in Hectares (Ha) by Pigeonpea in 2006/2007



Source: Household Survey for TL II and Treasure Legumes Project in Tanzania

Production area of pigeonpea in Babati and amount produced vary from year to year (see figure 1.3). This shows that the production of pigeonpea depends on other factors other than area used in production such as weather condition, capital that is used as input in production and market (which include smallholder's price which encourage more production). For example in year 2006 to 2007 there was big variation between the area coverage and amount produced.

Figure 1.3 Productions of Pigeonpea and Coverage in Hectares (Ha) From 2002 to 2008



Source: DALDO's Office (1998-2008).

1.4.3 Market and Utilization of Pigeonpea

Tanzania is one of the biggest exporters in Africa alongside with Malawi and Kenya of the crop which is said to contribute to the diets of an estimated 1.1 billion people around the world. According to the report from Tanzania bureau of statistics, and SARI, the major market of pigeon pea grown in Tanzania, is India, Europe, Kenya and other Asian countries. According to descriptive results from the household survey conducted by ICRISAT with funding from IFAD with the objective to map the adoption of improved varieties of drought tolerant legumes found that, the pigeonpea produced in Babati 76.3% is for sell, 17.1% for home consumption, 4.8% reserved for seeds and 1.8% used as gift. The specific data for dry pigeonpea exported is not available because pigeonpea is treated with other types of peas.

1.5 Purpose and Importance of the Study

Trade liberalization has open windows for smallholder farmers to access the market for their produce. The available opportunity needs to be tapped by studying the agricultural value chain and upgrading the chain to tackle transaction cost and asymmetric information problems that inhibit smallholder farmers to use the opportunity available. Upgrading the agriculture value chain in developing world can make an important contribution to increasing incomes and reducing poverty by making smallholders farmer to use the opportunity available for improving the marketing of their produce.

Upgrading means acquiring the technological, institutional and market capabilities that allow our target group (resource-poor rural communities) to improve their competitiveness and move into higher-value activities. In short, upgrading is the process of trading up, which allows poor people to access viable value chains or improve their position in existing value chains (Mitchell, Keane and Coles, 2009)

Improve the agriculture by establish and sustain producer-to-consumer value chains in sub-Saharan Africa's farm population in developing world can make an important contribution to increase incomes and reduce poverty. Smallholder farmer can use the opportunity available to improve the market of their produce by deriving their livelihoods from agricultural production activities, they will be employed in postharvest processing, packaging, transporting, and marketing of food and agricultural products. Many will benefit from these agricultural value chains through new job opportunities and higher incomes, and their lives will be improved. Created jobs and wealth in rural areas, reduce migration to towns and contribute to better incomes and higher standards of living. Income created in agriculture in rural areas will fuel other local economic sectors and stimulate broad-based growth in rural regions (Hauser, 2006).

A sound rural and agricultural development policy is a framework for poverty reduction which will lead to increased agricultural production and increased outputs in related sectors. Therefore looking at the overall objective of this study ''to analyze the value chain of smallholder farmers and improve their market access'' is relevant for the ultimate goal to improve production and reduce poverty.

1.6 Scope of the Study

The research covers value chain analysis for pigeonpea in Tanzania, specifically Babati District, which is the main pigeonpea producing district in Tanzania. The work was based on the marketing aspect of pigeonpea and involved collection of primary data and secondary data. Primary data was collected through a survey of different traders such as rural assemblers/brokers, urban assemblers/brokers, urban wholesalers, rural wholesalers, urban open air retailers and urban processors/retailers in rural and urban market which involves primary, secondary and tertiary respondents along the value chain. In order to get clear understanding of the insight of the study, different related work was utilized.

1.7 Structure of the Study

The study is organized into seven chapters. Chapter one is the introductory chapter consisting of background information; introduces the topic, statement of the problem; justification of the study; historical perspective of pigeonpea value chain in Tanzania, relevance, scope and organization of the study. Chapter two presents the theoretical framework for the current study. In this chapter transaction cost theory, has been reviewed in detail and its relevance to the current study made clear. Chapter three is dedicated to the agricultural value chain. The chapter starts with presentation of agricultural value chains in general and then narrows down the focus to Tanzania agro-commodity value chain where this study is based. Chapter four is devoted to the research methodology applied in this study. Chapter five, turns to the issue of conceptual framework whereby different concept used for analysis were presented. Chapter six considers results and findings of the study. Lastly, chapter seven provides the summary of the results, policy recommendations and areas for further research.

CHAPTER 2
THEORETICAL REVIEW

2.0 Introduction

The main focus of this chapter is to review theoretical issues pertaining to the value chain analysis of pigeonpea and link them to the study. Transaction Cost Theory (TCT) provides a useful theoretical framework for the study through the linkages between theoretical assumptions and research issues related to the study. Transaction Cost Theory (TCT) has been reviewed by different scholars. In this chapter, an overview of the theory will be presented and the elements of transaction cost theory pertaining to the value chain problems will be discussed.

2.1 Transaction Cost Theory

2.1.1 Theoretical Overview

The transaction cost theory (TCT) has been around for nearly seven decades, and it received quite a bit of prominence when introduced by Ronald Coase (who in 1991 won Nobel Prize in Economics for his early work on transaction costs in his article named "The nature of the firm" (Coase, 1937)) and there after popularized by Oliver Williamson (1975) in his seminal book *Markets and Hierarchies*. Later Grover and Malhotra took an inter-disciplinary approach to studying transaction costs as a social science phenomenon (Grover and Malhotra, 2003). The early development of Transaction cost Economics by Williamson was based on the idea of a small number of actors contracting under conditions of imperfect and asymmetrically distributed information between the transacting parties (Williamson, 1975).

It is argued that transaction cost economics is a dominant theory in explaining inter-organization exchange (Zheng, Roehrich and Lewis, 2008) and the transaction is considered to be the fundamental unit of analysis (Douma and Schreuder, 2008). It assumes opportunism and bounded rationality (Rindfleisch and Heide, 1997). In transaction cost analysis, inter-firm transaction is regarded as the basic unit of analysis and postulates that the attributes of a transaction are the critical determinants in establishing cost efficient governance mode (Buvik, 2001). Therefore the main reason for organising one transaction in one way and other kinds of transaction in another way is to economise on transaction costs (Williamson, 1981). Williamson's reasoning is in line with Buvik (2002) who postulates that governance arrangements do promote governance performance and reduce transaction costs (Buvik, 2002).

The theory has two ideal types of coordination namely: organization and market. The level of transaction costs incurred in the transactions encourages agents to build closer business relationships and look for low risk governance to reduce the effects of transaction costs (Lu, Trienekens, Omta and Feng, 2008). It therefore considers explicitly implications of organizations' choice whether to perform a transaction internally (vertical integration or organization) or through a market (horizontal integration or outsourcing). Decision on whether to outsource or not and the extent of outsourcing depends on the transaction costs associated with outsourcing versus internalization (Williamson, 1981). Internalization of the transaction represents the failure of the market to handle the transaction. In Agricultural market the presence of transaction costs implies that the efficiency of exchanges can become seriously constrained, and keeps many farmers from participating in certain agricultural markets (De Janvry, Fafchamps and Sadoulet, 1991). The selection of market outlet is largely dependent on the level of transaction costs incurred in transactions (Hobbs, 1997; Bailey & Hunnicutt, 2002). In other words, the transaction costs associated with exchanges are barriers to market access for resource-poor smallholders (Ruijs, Schweigman and Lutz, 2004; Kyeyamwa, 2007).

2.2 Transaction Cost Theory Assumptions

TCT assumptions are characterized by two main assumptions with respect to human behaviour; bounded rationality and opportunism (Williamson, 1981; Rindfleisch and Heide, 1997; Douma and Schreuder, 2008; Grover and Malhotra, 2003).

2.2.1 Bounded Rationality

Bounded rationality is a concept first articulated by Herbert Simon in 1957, and refers to the neurophysiologic and language limits of individuals (Simon, 1957). In an organizational context, while decision-makers might want to act rationally, they are limited in their ability to receive, store, retrieve, and communicate information without error. This limits the extent to which rational behavior can be conducted (Grover and Malhotra, 2003).

It asserts that human beings or decision makers have constraints on their cognitive capabilities and limits on their rationality. Decision makers often intend to act rationally given the problem at hand, but their intentions may be limited by their ability to process information and communicate (Rindfleisch and Heide, 1997). These constraints are heightening in uncertain or complex environments, in which the circumstances surrounding the transaction

or the exchange cannot be specified with certainty before the parties go into the contract or relationship (Grover and Malhotra, 2003). For instance, in the case of agriculture value chain, due to uncertainty associated with the supply, it limits the extent to which rational behavior can be conducted to make specification on all the terms clear to the parties doing a transaction. These conditions make it difficult to fully specify the conditions surrounding an exchange, thereby occasioning an economic problem. This brings the problem of opportunism (Douma and Schreuder, 2008). According to Ellram and Billington, (2001), uncertainties surrounding a transaction create problems in contractual relationships due to the fact that contracts are somehow incomplete. As a result, opportunism may develop.

When the rationality constraint is binding however, it gives rise to transaction costs that need to be minimized through a correct choice of governance (Grover and Malhotra, 2003). In the case of marketing of agricultural product from the farm gate (upstream) to the end users (downstream), the value chain involves uncertainty, therefore, under this condition bounded rationality forces the need for the two parties to incur considerable transaction costs associated with ongoing negotiations on specifications and prices between the buyer and the sellers such as cost of finding the sellers and buyers, negotiating sale prices, verify the quality of product and reliability of weight.

2.2.2 Opportunism

Opportunism refers to the incomplete or distorted disclosure of information for the parties doing transaction. Opportunism assumption claims that human beings are not only bounded rationally, they also sometimes display opportunistic behaviour (Douma and Schreuder, 2008). It indicates that human actors in the exchange relationship will be guided by considerations of self-interest with guile. This includes behaviours such as cheating, lying, and subtle forms of violation of agreements (Williamson, 1985).

In TCT, the existence of opportunism gives rise to transaction costs in the form of monitoring behaviour, safeguarding assets, and making sure that the other party does not engage in opportunistic behaviour (Grover and Malhotra, 2003). Given the opportunity, decision makers may seek to serve their own interests, and it is difficult to know ex-ante who is trustworthy and who is not (Barney, 1990). Opportunism poses a threat on business relationships due to the presence of specific assets that support relationships. The fact that specific assets have limited value outside relationships; opportunism creates more challenge

to business partners. In the same way, specific assets in-turn creates a safeguarding problem due to the fact that market governance may not longer limit opportunism. The result of bounded rationality and opportunism is the risk that one of the parties to a transaction or series of related transaction may exploit his or her information advantage (Parker and Hartley, 2003).

In sum, assumptions of bounded rationality and opportunism are distinctly different facets of TCT, and together will give rise to transaction costs. As described earlier, bounded rationality of individuals in some cases limits the ability to specify all conditions of the decision tree ex ante, thereby occasioning the necessity of specifying an incomplete contract between parties and the economic costs of managing the contract. The presence of opportunism where some parties are assumed to engage in behavior that requires monitoring increases the cost of transactions (Grover and Malhotra, 2003).

For the case of transaction of pigeonpea, a buyer or seller may behave opportunistically towards the other party and this increases the cost of monitoring the transaction in terms of quality and price negotiation due to the absence of a complete contract.

2.3 Dimension of Transaction Cost

Transaction cost has three dimensions upon which it depends. These are frequency of transactions, assets specificity and external and internal uncertainty. These are the determinants of whether a particular transaction cost will be high or low. In agricultural market many transactions involve costs because they typically require farmers to search for buyers with whom to exchange; screen potential buyers to ascertain their trustworthiness; bargain with potential buyers to reach an agreement; transfer the product, and monitor the agreement to see whether its conditions are fulfilled and enforced. (Lu, Trienekens, Omta and Feng, 2008) These costs increase with the frequency of the transactions, the specificity of the assets involved, and the uncertainty of the transactions (Williamson, 1979).

2.3.1 Asset Specificity

Asset specificity of a transaction refers to the degree to which assets are tailored to a specific transaction. It can be physical or human assets (Douma and Schreuder, 2002), refer to the transferability of assets that support a given transaction. An asset is said to be transaction

specific if it cannot be redeployed in an alternative use without significant loss in value. It might be physical or human assets. (Douma and Schreuder, 2002)

Highly asset-specific investments (also called relationship-specific investments) represent costs that have little or no value outside the exchange relationship. These costs are mainly in the form of human specificity (e.g. training of salespeople specifically for a certain partner) or physical specificity (e.g. investment by a supplier in equipment, tools, jigs, and fixtures to cater to idiosyncratic needs of a manufacturer). Investments in information systems that primarily serve the needs of one unique customer and cannot be leveraged across other external parties would also be another form of asset-specific investment. Zaheer and Venkatraman (1994) suggest that, using proprietary systems increases business process asset specificity. Inducement of Information Technology into the relationship reconfigures the existing processes and creates procedural specificity (Mukhopadhyay and Kekre, 2002), whereby firms develop processes (with or without Information Technology, Just in Time etc.) that are unique to the relationship and which may require learning time if developed with other suppliers.

2.3.2 Frequency of Transaction

When the required level of asset specificity is high, a transaction will be carried internally rather than across markets. Introduction of an internal governance structure requires investment in fixed assets. The extent of capacity utilization by the volume of transaction conducted through a particular governance structure has to be considered. Douma and Schreuder (2008) argue that, the costs of specialized governance structure are more easily covered for high frequency transactions. This argument is also supported by Clemons, Reddi, and Row (1993). They point out that, average cost of transactions decreases with the cost of transaction. Therefore frequency of transaction has to be considered in transaction cost analysis.

2.3.3 Uncertainty

Williamson (1979) describes uncertainty as inability to predict contingencies that may occur or refers to the unanticipated changes in circumstances surrounding a transaction. This uncertainty could preclude both the formulation of a contract ex ante and/or the ability to verify compliance ex post (Grover and Malhotra, 2003). It is categorized into two groups, external or environmental uncertainty and internal or behavioral uncertainty. The first type deals with uncertainty in the market and can be reflected in constructs such as unpredictability

of the environment, technology, and demand volume and variety while the second type reflects the idea that the organization doesn't know what it wants or the transaction situation is such that the parties in the contract have no assurance whether the other part will fulfill its obligations (Ellram and Billington, 2001). Environment uncertainty is caused by "….changes in marketing conditions and technology surrounding buyer seller relationship" (Buvik and Grønhaug, 2000, p.446). As discussed earlier, the effects of the bounded rationality constraint are accentuated by conditions of uncertainty.

2.3.3.1 Internal/ Behavioural Uncertainty

Internal or behavioural uncertainty surrounding the transaction such as purchase of complex products reflects the idea that the organization does not know what it wants or the transaction situation is such that the parties in the contract have no assurance whether the other part will fulfil its obligations (Ellram and Billington, 2001). Internal uncertainty arises from difficulties associated with monitoring the contractual performance of the exchange partner in the relationship (Kabadayi, 2008). It may also be due to difficulty in the performance evaluation, as well as performance ambiguity (Kafka, 1997). The increase in the internal uncertainty may result in the increase in transaction cost. This proposition is supported by Lyons, (1994). Pigeonpea marketing is surrounded by internal/behavioural uncertainty whereby the transaction cost may be high or low depending on whether the seller knows what the availability is or has access to information on quality requirement by the buyer or end customers.

2.3.3.2 External / Environmental Uncertainty

Environmental uncertainty focuses on the level of uncertainty in the market place. It refers to "unanticipated changes in circumstances surrounding an exchange" (Noordewier, John and Nevin, 1990, p.82). External uncertainty is caused by "….changes in both marketing conditions and technology surrounding buyer-seller relationship" (Buvik and Grønhaug, 2000, p.446). An organization feels uncertain when it does not have relevant information (Kabadayi, 2008) or when the relevant contingencies are too numerous or unpredictable to be specified (Stump and Heide, 1996). External uncertainty measures the type of external environment faced by an organization. As external uncertainty increases, transaction cost increases and leads to the more internalization of transactions. However, more complex models consider the effect of uncertainty in connection with specific assets; if external uncertainty increases, an organization may demand more flexibility, which should reduce the level of asset specificity

found in an organization. Likewise, if asset specificity increases, external uncertainty becomes a more relevant factor for selection of an appropriate governance mode for mediating transaction (Kafka, 1997).

2.4 Main Category of Transaction Cost

Transaction cost can be categorized into two main groups; ex-ante and ex-post. Ex-ante transaction costs arise from direct opportunity costs, which imply productivity losses resulting from lack of appropriate employment of specific assets. While, ex-post transaction costs on the other hand, emanate from the problem of hidden action in an ongoing relationship. Ex-post transaction costs are associated with the problem of performance control, performance verification costs, adjustment costs, and bargaining costs (Buvik, 2002).

In pigeonpea marketing, the ex-post transaction costs arise from searching of buyers and sellers due to poor access of price and quality information. Therefore such costs may increase as the access to information about the prices problem increases.

CHAPTER 3
AGRICULTURAL COMMODITY VALUE CHAIN

3.0 Introduction

This chapter explains various aspects of value chain in agricultural commodity market. It starts by looking at the concept of a value chain, agricultural commodity market in Sub Saharan Africa and narrows down the subject matter. It provides linkage which is useful for understanding of the value chain for pigeonpea since it takes into considerations both theoretical and empirical contributions. It describes key features of the agricultural value chain which is an important input to the study. The paper is divided into four parts, part one describes the value chain concept, part two explains agricultural commodity value chain in Sub Saharan Africa, part three describes the challenges in the agricultural commodity value chain, and the last part shows marketing chain of agricultural commodity in Tanzania.

PART 1: VALUE CHAIN CONCEPT

The value chain concept was first used by Michael Porter in the 1980's. He defined the value chain as the various activities which were performed in particular links in the chain. In the mid-1990s Gereffi introduced the concept of Global Commodity Chains (GCC) (Melle, Coulibaly and Hell, 2007).

The concept of a value chain has been seen as a development tool that helps in identification of policies that can be implemented for individual producers and countries to increase their share of the gains (The International Trade Centre (ITC), 2003). It also gives a better understanding of how the sector is performing and contributing to national socioeconomic development.

The value chain involves the whole process of a product from its conception, through the different phases of production, to its end use and beyond (Pietrobelli and Saliola, 2008). This includes activities such as design, production, marketing, distribution and support to the final consumer (Cunningham, 2001). The International Trade Centre (ITC) sees it as the chain of activities from the time when the product or service is only an idea to the time when it is disposed of after use. A 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. Through the chain of activities, processes can be mapped to help determine better strategies to capture greater value within the national component of the global value chain.

The value chain approach helps strategy makers gain a better understanding of how sectors can contribute to national socioeconomic development by using exports as a tool for development. It gives an overview of how the sector is addressing the issues of employment creation, skills development, geographic diversification of industries and other development issues. This can feed into the strategy design process, helping the strategy team determine priorities, both in terms of action for the sector under review and for the sector's relevance to the national export strategy. By helping to explain the distribution of benefits, particularly income, to those participating in the global economy, value chain analysis makes it easier to identify the policies that can be implemented for individual producers and countries to increase their share of these gains.

The value chain in this study is used to promote the performance of smallholder farmers in the global market both in terms of marketing of their produce. This provides opportunities to enhance their position in global markets.

3.1 Value Chain Governance

Governance refers to the inter-firm relationships and institutional mechanisms through which non market co-ordination of activities in the chain is achieved. Value chain governance refers to relationship among the buyers, sellers, service providers and regulatory institutions that operate within or influence the range of activities required to bring a product or service from inception to its end use. The question of governance in a value chain arises when some firms in the chain work according to parameters set by others. When this happens, governance structures may be required to transmit information about parameters and enforce compliance. In a value chain non marketing activities are coordinated using various governance types (Humphrey and Schmitz, 2004).

According to Frederick and Gereffi, (2004) the form of governance can change as an industry evolves and matures, and governance patterns within an industry can vary from one stage or level of the chain to another. The dynamic nature of governance can be largely accounted for with three variables: the complexity of information the production of a good or service entails (design and process); the ability to codify or systematize the transfer of knowledge along the chain; and the capabilities of existing suppliers to produce efficiently and reliably. If one of these three variables changes, then value chain governance patterns tend to shift in predictable ways. For example, if a new technology renders an established codification scheme obsolete, sub value chains are likely to become more relational and if competent suppliers cannot be found, vertical integration will become more prevalent. Conversely, rising supplier competence might result in captive networks moving towards the relational type, and better codification schemes set the stage.

Governance is about power and the ability to exert control along the chain at any point in the chain. Within the chain, power is exercised by firms and workers within firms. Outside the chain, power comes from the state and other institutions created by the enabling environment and from consumers. Those in possession of industry power actively shape the distribution of profits and risk through their activities. Within the chain, power at the firm level can be exerted by big firms or suppliers. Powerful firms can be producers or buyers in the chain. Knowing if the powerful firm in a chain is a buyer or a producer can help to determine strategies to use when restructuring the value chain taking into consideration the supplier (Frederick and Gereffi, 2004).

Schmitz and Knorringa, (2000) reinforced Gereffi's notion that global buyers (retailers, marketers, and traders) can and do exert a high degree of control over spatially dispersed value chains even when they do not own production, transport or processing facilities (Gereffi, Humphrey and Sturgeon, 2003). In a chain some firm (or organization or institution) sets and/or enforces parameters under which others in the chain operate, such as what is to be produced. This includes product design and specifications and how it is to be produced. This involves the definition of the production processes, which can include elements such as the technology to be used, quality systems, labor standards and environmental standards, how

much is to be produced, and when[3]. According to Humphrey and Schmitz (2004), price also can be another parameter that a participant in a chain enforces for others to obey.

In a study on the impact of increasing power of UK supermarkets on Kenyan and Zimbabwean fresh vegetables exports, Doland and Humphrey, (2000) look at the size of the buyer as the factor that influences how power is exercised within a chain. They found a high concentration of this export trade in the hands of a few large firms, to the exclusion of small and medium sized exporters and small growers from the supermarket chain.

3.2 Organization of Transaction

This binary view of how global production might be organized, either through markets or within transnational firms, is explained by transaction costs economics in terms of the complexity of inter-firm relationships (Williamson, 1975). This raises the issue of opportunism, which makes transactions more costly because safeguards have to be put in place. Second, even without opportunism, transaction costs increase when inter-firm relationships require greater coordination (Gereffi, Humphrey and Sturgeon, 2003).

3.3 Market Organization

It has long been recognized that in situations characterized by bounded rationality in which information is either unavailable or can only be acquired at a cost, organizations as well as markets coordinate economic activities. Organizations emerge because markets depend on a shared knowledge of the prices and the characteristics of the goods that are being traded, the absence of serious third person effects (so called 'externalities') that are not reflected in prices and sufficient stability of products and manufacturing practices so that both sellers and buyers can plan their activities rationally and make rational decisions to sell and buy at the prices at which the markets equilibrate (Humphrey and Schmitz 2004).

Network actors in many instances control opportunism through the effects of repeat transactions, reputation, and social norms that are embedded in particular geographic locations or social groups (Gereffi, Humphrey and Sturgeon, 2003).

[3] www.microlinks.org/vcwiki. USAID 22-03-2010

3.4 Market Power in a Supply Chain

Market power can be exerted by participating firms in the chain. If the retail or processing sector is highly concentrated, then there is the possibility of oligopoly power being exerted by these firms in selling their produce. At the same time, the downstream firms can act as oligopsonists in purchasing produce from farmers, middlemen and processors. Where the retail and processing sectors are imperfectly competitive, successive market power may be exercised at each stage of the food chain. For example in the coffee sector Piyapromdee, Hillberry and MacLaren, (2009), noted that only three roasters Philip Morris, Nestlé and Sara Lee account for just less than 50% of the total market, while in the chocolate market, six manufacturers account for around 50% of total sales. Three global companies account for 80% of the total soybean crushing industry in the European Union and 70 % of that market in the United States.

The exercise of market power in the supply chain according to Food and Agriculture Organization is particularly evident where successive stages are closely coordinated by contractual arrangements. Arrangements of this type, which have become much more developed in recent decades are particularly evident in the supply of fresh food to supermarkets, where there are close vertical relationships in the chain, controlled by private companies. The development of supermarkets, initially in the developed countries and more recently, and at a rapid rate, also in developing countries, has been one of the drivers behind these developments. Small numbers of buyers are prevalent in these markets and product differentiation (the provision of particular product qualities for a particular outlet) is evident. Farmers in this system produce under contract to agents acting on behalf of supermarkets, with product quantities, qualities, timeliness and prices specified in advance.

However, many farmers are unable to enter this system. Small, less capitalized, less technically advanced ones are unable to reach the required standards. Often a two or three tier system develops in agricultural production, with some farmers producing on contract to supply to tightly controlled standards for export; others, typically smaller farmers, producing independently for the traditional local market; with perhaps an intermediate group supplying local supermarkets. The level of competitiveness in the supply chain of agricultural

commodities has important implications for productivity in the sector, for growth of production and incomes, for equity and farmer welfare, and on the impact which trade liberalization can have on the sector. A non-competitive market structure does not, however, necessarily imply a lack of competitive practices, as firms do not necessarily exercise their market power (FAO, 2007)

Swinnen and Vanderplas studied a number of markets, and concluded that the competitive structure of firms in the supply chain has an important bearing on farmers. Competition in the chain results in better returns to producers who are able to capture a larger percentage of the export price. Where firms compete with one another, farmers are offered higher prices, and are typically also offered inputs and credit as firms attempt to secure their supplies. Conversely, under monopolized systems, where a state-owned enterprise is the only trader, such as in some east European countries, rent is extracted from farmers, who fare more poorly than under a competitive system. Competition among buyers, however, undermines enforcement, and side-selling can become a problem. Although contracted to sell to one firm, farmers may be tempted to dishonor contracts and sell to another who offers higher prices. Firms can guard against default by means such as incorporating appropriate incentives and penalties into contracts, informal personal relationships, coordination among buyers, publicizing defaulters thus attacking their reputations, and setting up a system of group responsibility among farmers (FAO, 2007) .

According to Piyapromdee, Hillberry and MacLaren, (2009), in agricultural value chain small farmers are vulnerable to the monopsony/oligopsony power of first-stage buyers is a running theme in agricultural economics both in developed and developing countries. The responses by governments to such market power have often included encouraging the formation of cooperatives or creating state marketing boards with statutory power to buy from farmers and to sell into marketing channels. One can view the fair trade channel as a particular (private) form of these more common (government) responses to oligopsony power.

3.5 Contract Arrangement

In order for smallholder farmers to compete in a globalized market economy, they need access to production inputs and to updated information about production and post-harvest practices

needed to ensure productivity, quality, and timeliness. Due to cash flow constraints, many farmers require these inputs on credit, yet both input and credit markets frequently work poorly in Sub Saharan Africa and poorer areas of Asia. Under these conditions, contract farming arrangements, also known as out grower schemes, have governed production of a wide range of cash crops throughout the developing world for many decades. When effective, these approaches allow smallholder farmers to profit from a crop they might ordinarily not have access to, and allow processors and exporters to benefit from these farmers' low costs of production while ensuring sufficient supply to make their investment profitable (Tschirley, 2007).

Traditional marketing is done by small traders who offer little trade credit, use no forward ordering and enact on the spot transactions with poor market institutions, high search costs and imperfect and asymmetric information. Larger traders rely more on relationships and social capital to partly overcome these problems. However, global retail chains put different systems in place. They procure their goods through micro-contracts, fixing the price in advance and supplying seeds, fertilizers and chemicals on credit. For example, According to the Food Agricultural Organization report, one major firm which exports vegetable to Europe imposes rigid control and monitoring of production. It provides training to farmers, and it was found that farmers under contract achieved considerably higher productivity than those without contracts. Contracts are honored as a result of social pressure rather than legal processes. These contracts are further characterized by extensive farm assistance and supervision programs (FAO, 2007).

3.6 Information and Communications Technology (ICT) in Africa

Modern Information and Communication Technology such as cell phones, web and email are increasingly being used in Africa (Tschirley, 2007).The very rapid expansion of cell phone ownership, even in rural areas of Africa, means that these tools could be especially useful (Tollens 2006a). Weber, John, Staatz and Dembélé (2006) suggest that modern Information and Communication Technology tools should be used, but radio is the most effective means of providing broad-based unbiased information to help improve the bargaining power of farmers and in informing public decision makers about how markets function.

3.7 Compliance to Legal and Commercial Standards

The export market now requires exporters to comply with a range of standards i.e. legal requirements such as adherence to maximum residue levels of pesticides, phyto-sanitary certificate and commercial requirements (Reardon, Berdegue and Farrington, 2002). Such conditions put forward by importers on exporters have implications for production; the challenge to meet them sidelines smallholder producers to various degrees (Temu and Temu, 2006). The introduction of simple and easily administered quality standards based on end-user needs can help farmers, traders and exporters to benefit from niche markets that demand higher quality standards than the traditional export market (Jones, Freeman and Monaco, 2002).

Compliance with product parameters can usually be monitored and enforced through inspection and testing**.** This can take place at various stages, including at the design and pre-production stages, depending upon the extent to which the supplier is responsible for the design. In some cases, government agencies will also inspect products prior to their introduction in the national or regional market (Humphrey and Schmitz, 2004).

Supplier capability is important in meeting all transaction requirements. This include quantity and quality specifications, on-time delivery, or environmental, labor and safety standards. Suppliers need access to support services such as input supply, equipment maintenance and upgrades, reliable transportation, and certification assistance to develop new capabilities. If affordable and effective services are not available from supporting markets, suppliers will rely more heavily on buyers to meet these needs and vice versa (Jones, Freeman and Monaco, 2002).

PART II: AGRICULTURAL COMMODITY MARKET IN SUB SAHARAN AFRICA

The agricultural sector dominates the economies of most countries in Sub-Saharan Africa providing food, employment, income and foreign exchange. Recent developments in Africa highlight an increasing trend toward liberalized domestic markets and an opening up of their economies to the forces of international trade (Jones, Freeman and Monaco, 2002).

3.8 Farmers Characteristics in Sub Saharan Africa

The average farmer in Sub Saharan Africa owns small pieces of land for production (0.9 to 3ha), and production is mainly rain fed. Such farmers face various challenges posed by nature, including poor soils, destructive crop pests and diseases, and recurring droughts. Average yields are low due to natural calamities, limited investments in irrigation and lack of affordable technologies that would have improved soil fertility, lack pest and diseases control and weeds management. Limited technology advancement is partly due to limited research and technology transfer.

Market failures due to interventions in the periods of command economies, and lack of capital are additional strong challenges. Farmers have had limited access to capital and market infrastructure (roads, physical market structures, market information and contacts) (Temu and Temu, 2006). Failures to develop capital markets and lack of appropriate public infrastructure such as roads, railways, airports and seaports, are basically due to poverty, this in turn leads to high costs of transportation and credit delivery. As a result, most small-scale farmers are trapped within subsistence agriculture, with minimal orientation towards the market (Heidhues, Atsain, Nyngito, Padilla, Ghersi, and Vallee, 2004; Temu and Temu, 2006).

In Sub Saharan Africa the number of small farms producing crops for export has been steadily declining. Exporters find it more convenient to deal with a few large commercial farms than with many small holders. Variations in crop quality due to non-uniform agronomic practices from farm to farm, logistical problems of overseeing compliance with pesticide use, child labor, and worker safety regulations, and difficulty of communicating with a large number of growers make small growers less attractive to exporters (Singh, 2002).

In several African countries, foreign and domestic non-governmental agencies and governments have set up projects to bring more small holders into export oriented crop production. However, to enable small-scale farmers to make prudent decisions, they should be given full facts about the benefits and risks of export crop enterprises, including average income in good growing seasons and amount of loss from crop failure, market price variability over time, marketing institutions and their weaknesses and strengths, higher input requirements and the need for credit, and special production skills and quality control requirements. Evidence from different countries suggests that the income effects from diversification are positive and can help reduce income inequality among small-scale farmers (Singh, 2002).

3.9 Characteristics of Traders

Traders operate in both the formal and informal economy, and switch between the two at will (KIT and IIRR, 2008). Traders can be distinguished into large, medium and small. Large traders have more capital available and are in a position to cover a large area for buying products. Medium traders are more restricted to the area where they trade and offer only local products. Medium traders and large traders have better access to capital giving them an opportunity to give credit to buyers thus generating a higher turnover. At the same time, because they are reliable the traders can get credit as well from the farmers when they purchase products from them. Small traders are mostly people who don't own land and have no other option than to trade in order to earn a living. Mostly they buy product from a large trader leaving them only a small margin (De Putter, van Koesveld and de Visser, 2007). Traders are not easily brought under the sway of government. It is hard to tax them or force them to obey rules. A successful trader is seen having a highly entrepreneurial, free mind. Historically, traders have fulfilled an important role in getting items from the producer to the end user: from farmer to broker, to distributor, to food store, to consumer. The trader interprets, translates checks quality, catches errors, transports, sorts and bulks, provides finance, takes on risk, and in many other ways facilitates transactions. Many skilled suppliers, such as farmers, do not want (or cannot afford) to become experts at marketing (KIT and IIRR, 2008).

In a book titled "*Experiences with empowering African producers in value chains"* published in 2006, KIT and IIRR introduce the issue of empowerment in a value chain as a process that impacts on various social structures and personal relationships. They conclude that empowerment of producers cannot be addressed without taking into account their relationship with other chain actors. The role of traders in value chains was identified as the subject that needs more attention if we want to understand empowerment processes of producers in Africa (KIT and IIRR, 2008).

3.10 Agricultural Production and Markets

The traditional pattern of agricultural production and markets as described by economists was (and to a large extent, still is) one of more-or-less perfect competition, typified by, *inter alia*, product homogeneity, a large number of buyers and sellers and freedom of entry to the market. Under this model, each small farmer determines the volume and type of output to be produced and placed on the market. The relationships between seller and buyer (producer, wholesaler, wholesaler, and retailer) are generally limited to simple spot transactions (FAO, 2007)

The widely noted exception to the free market according to Food Agricultural Organization report, (2007) was the operation of various state trading enterprises. In countries such as the communist states of Eastern Europe, as well as China and Viet Nam, the supply chain was integrated and controlled by the state. Production, processing, marketing, and the provision of inputs and credit were all centrally planned. But in other countries also the state played a significant role in vertical coordination in supply chains. In many African countries, parastatal organizations provided inputs and extension services to farmers and purchased their output and, despite the liberalization that has occurred in the past 20 years, this state controlled vertical coordination are still common in some African countries.

According to Food Agricultural Organization, the perception of commodity markets has been changing in recent decades. The presence of market power has not been adequately recognized in the literature. Raw commodities are typically inputs into a vertical commodity chain, such that the raw commodity is only a small proportion of the value of the final

product, the downstream stages of which may, in both developed and developing countries, be less than perfectly competitive. Coffee producers, for example, account for 10% of total value added while processors, roasters and retailers receive between 20-30% respectively. The data are similar for cocoa, with farmers receiving around 15% of the total value of the finished product. Even where the commodity involved requires little processing, the shares received by commodity producers can be rather small. Banana plantations typically receive only 10% of the total value, while the share of retailers may be as much as 40%.

3.11 Marketing System

This refers to the system where produce flows in a value chain from the farmers to the end user/consumer. There are two types of marketing system i.e. direct marketing system and indirect marketing system (see the figure 3.1).

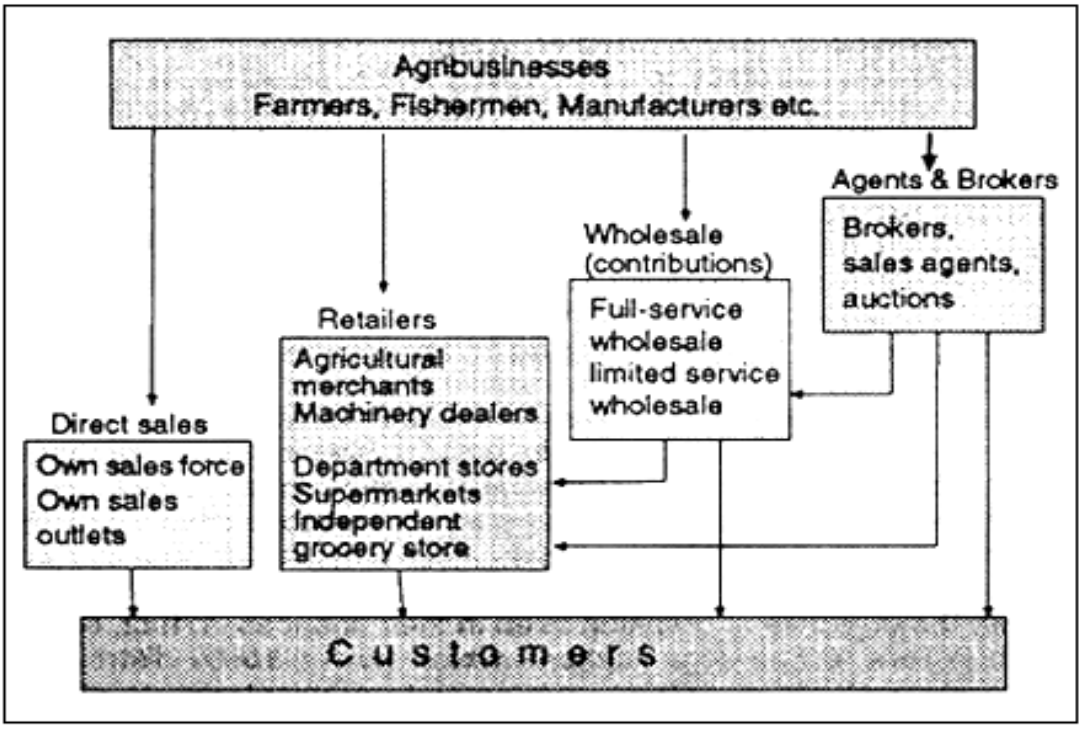
3.11.1 Direct marketing

This kind of marketing system involves the farmers to sell directly to the consumer. In this type of marketing system relationships with customers are vital. Direct marketing is growing in both business-to-business and business-to-consumer markets. Today's technological advances permit producers to interact directly with large numbers of consumers. With industrialization, the producers naturally became separated from the users, and the emphasis shifted from the relationships towards the transaction. International development projects and programs have generally ignored traders, or have tried to bypass them. Many government and NGO interventions have been geared towards eliminating traders and replacing them by producer organizations. Only rarely have traders been appreciated for their role in value chain development. It is only recently that some governments and NGOs have realized that sustainable value chains require traders who bridge the gaps between producers and users (KIT and IIRR, 2008). Where distances between producers and consumers are short, direct transactions between the two groups can take place. Farmers who elect to market their products directly have to trade off the benefits of doing so against the time they are away from farming activities (Tilanus, 1997).

3.11.2 Indirect marketing

In directing marketing involves selling through the brokers, wholesalers and retailers and not directly to the consumers (see the figure 3.1).

Figure 3.1 Marketing Systems



Source: Tilanus, (1997)

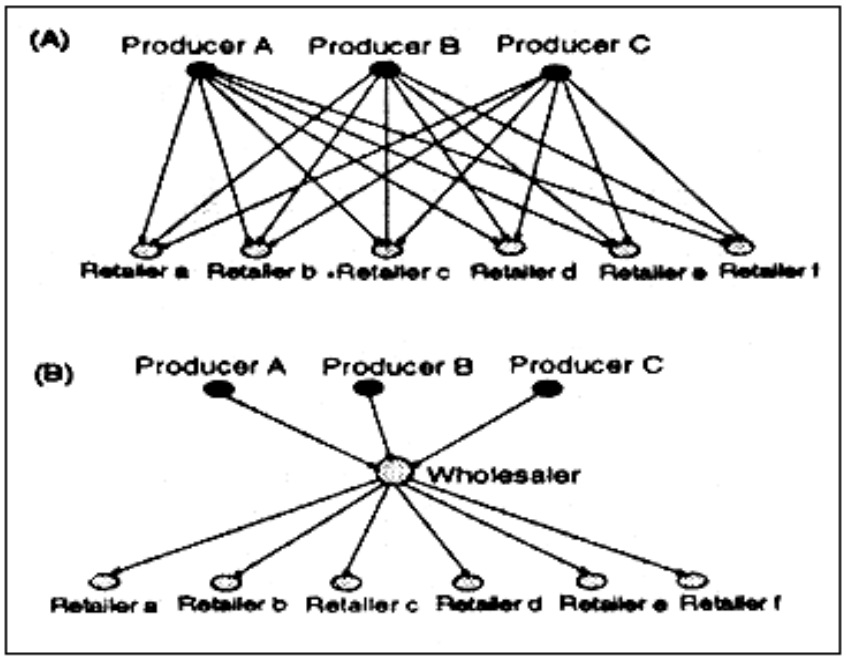
3.11.2.1 Advantage of Using the Direct System

The efficiency of most marketing systems is improved by the presence of effective intermediaries. An intermediary between a number of producers and consumers reduces the number of transactions and thereby procurement and selling costs and time are all reduced (see the figure 3.2 below). This can be explained as long as they perform marketing functions which others cannot or will not, or can perform his/her marketing functions more efficiently than can the producer and/or alternative intermediaries.

Gaedeke and Tootelian, (1991) suggest the reasons why middlemen/ brokers are commonly employed by producers are that, intermediaries provide wider market exposure, few producers

have sufficient capital to market directly and producers can usually earn a higher return on investments by employing available capital in activities other than those of direct marketing. Thus, middlemen/brokers are needed in several parts of the supply chain to transfer information of the quantities and prices supplied and demanded and acting as guarantors of the two parties for a small commission. Long supply chains are costly in terms of time and money. In the Tanzanian context, the frequent use of brokers is often the only viable way to trade in the absence of enforceable and foreseeable contracts. The use of brokers to reduce transaction costs has also been found in the country context of Ethiopia (Gabre-Madhin 2001). The commission charged by each of the market actors in the chain varies according to the personal relationship between the traders, time of the year, type of good, and competition at the market. Thus the exact description of the marketing margins varies with each transaction (Eskola, 2005).

Figuren 3.2 Marketing Systems



Source: Tilanus, (1997)

In developing countries, middlemen/broker is dismissed out of hand as parasites. The argument made is that it is the producer who, by the sweat of his labor, provides the physical commodity and it is he/she who deserves to gain most from marketing transactions in that product. When it is observed that marketing costs are sometimes four or five times the price

paid to the farmer, a sense of injustice can arise. However, the value, if any, that the intermediary adds to the product, by virtue of the functions performed, must be taken into account. Intermediaries can only be justified if they can perform these functions more efficiently and effectively than the other actual or potential market participants (Tilanus, 1997).

PART III: CHALLENGES IN THE AGRICULTURAL MARKETING SECTOR IN SUB SAHARAN AFRICAN

In Sub Saharan Africa the number of small farms producing crops for export has been steadily declining (Singh, 2002). Exporters find it more convenient to deal with a few large commercial farms than with many small holders. Variations/uncertainty in crop quality due to non-uniform agronomic practices from farm to farm, logistic problems of overseeing compliance with pesticide use, child labor, and worker safety regulations, and difficulty of communicating with large number of growers make small growers less attractive to exporters (Singh, 2002).

The emerging trend is an increased demand for value added products. This requires considerable investment by the producer/exporter at the origin, not only in technology but also in terms of management systems if they want to use a direct marketing system and trade directly to consumers (Temu and Temu, 2006).

Small holder farmers are geographically dispersed within their villages. In order to be successful it is essential to have an adequate number of willing growers in close proximity. Farms should be located in areas with good road and transportation systems. Otherwise it becomes uneconomical to collect produce from the different farms and set up post-harvest processing centers (Singh, 2002).

PART IV: AGRICULTURAL COMMODITY MARKET IN TANZANIA

Tanzania is a country in the Eastern and Southern Africa (ESA) region. In the 1990s, agricultural sectors of the ESA i.e. Tanzania, Malawi and Uganda accounted for an estimated 41% of their GDPs (See the table 3.1). This region differs in some ways from overall average

statistics for Sub-Saharan Africa. It represents countries that have relatively high dependence on agriculture compared to the rest of Sub-Saharan Africa. 82% of the population in the ESA region resides in the rural areas (World Bank, 2003) and depend on agriculture for their livelihood. Contribution of agriculture to East and Southern Africa is more than double the average contribution of agriculture in Sub-Saharan Africa, and East Asia and Pacific regions, where their agricultural sectors contribute only 18% and 16% respectively. Returns to traditional export commodities have been declining over the years due to a fall in world prices, and as a result, domestic production has declined (Temu and Temu, 2006).

People in the region continue to depend on agricultural production for their livelihoods, by producing of agricultural raw materials, or intermediate products with limited value added. Limited added value in the agribusiness chain, in turn, results in low returns to the agricultural sector. This has serious implications for the development of the region. The GDP per capita is consistently lower in countries that are much more dependent on agriculture compared to those that are less dependent on it, for example, Ethiopia (51%: $106), Uganda (49%: $300), and Tanzania (46%: $186) have lower GDP per-capita than Kenya (27%, $342) (Temu and Temu, 2006).

Table 3.1 Contribution of Agricultural to GDP in Eastern and Southern Africa

Countries	1980	1990	2000	80-85	90-00
Ethiopia	-	49	52	53	51
Kenya	33	29	20	33	27
Malawi	44	45	42	43	39
Mozambique	37	37	24	42	33
Tanzania	-	46	45	-	46
Uganda	72	57	42	62	49
Average ESA	46	44	38	46	41
Sub-Saharan Africa	18	18	17	18	18
East Asia & Pacific	24	20	13	23	16

Source: World Bank 2003

The region is also lagging technologically in agricultural production as well as in agribusiness development. Crop yields are lower than in other regions of the world. For example, cereals, of which its trend reflects broader characteristics of Africa's agricultural productivity, yields

in ESA countries are 50% lower than the average yields in Asia. The low yields are due to limited use of improved planting material and breeds, and poor farming.

3.12 Market Structure in Tanzania

In order to improve the marketing arrangements for agricultural products, one needs to understand the marketing channels that are currently in use. In fact, the majority of small-scale agricultural producers are consuming their production to large extent within the household. Currently supply chains are based on the contacts and knowledge of the people involved in the trading and not just in the presence of physical roads, buildings and vehicles (Lynch, 1994). The supply chain from the producer to the final consumer is long and can take many forms along the way. According to Economic and Social Research Foundation (ESRF) the market can be categorized into four main parts i.e. Local village markets, regional market, national market and export market as shown in table 3.2 below:

Table 3.2 Characteristics of Different Markets in Tanzania

	Local Village Market	**Regional Market**	**National Market**	**Export Market**
Location	Cross roads near villages	Region and/or district capitals	Regional centers	Foreign
Traders	Women and children	Large, medium and small traders	Large traders	Foreigners
Supply	Unreliable	Reliable	Reliable	Reliable
Products	Local/limited choice Low quantity	Regional/broad range Low to large quantity	National/broad range Large quantity	National/focused on special crops Large quantity

Source: Eskola, 2005.

3.12.1 Local Village Markets

Local markets are small and cater for a limited number of near-by households. The markets are informal and emerge at cross-roads or small concentrations of households to facilitate the exchange of products among local farmers using commonly money as a means of exchange. The traders at the markets are farmers themselves with well-established small circles of customers. The access to the local market is easy but the supply at the market is very limited

and fluctuates according to the season. These markets are not connected to the national markets and little attempt is made to engage with the larger markets in the region. Local traders are most often women or children of the household who collect the products from local producers and sell them to their established circle of customers while exchanging the news with the neighbors and watching the small children. Even though larger markets would be accessible to these traders, social benefits at the local market outweigh the modest economic benefit of engaging with the regional market (Eskola, 2005). Choice of products is low and also supply is unreliable (De Putter, van Koesveld and de Visser, 2007**).**

3.12.2 Regional Markets

Regional markets are located in the centre of the region or in larger district capitals. These markets are often the largest markets available to the consumers. The producers may come to the markets to sell their products but most often the trade is run by professional traders who collect the products from the local farmers (either at the farm gate or at the market) and who come to the market every day of the week. Traders in regional markets commonly collect goods from a large geographic area including other regional markets, local small- and large-scale producers, as well as collection points in surplus areas (Eskola, 2005).

3.12.3 National Market

The national market, as defined in this study, collects products from all regions to be sold in Dar es Salaam. Even though the national market, in a broader sense, can refer to trade between the regional markets, the poor infrastructure between the regional markets is currently limiting such transactions. Most products are traded via Dar es Salaam even though they would be consumed in other regions, which emphasizes the importance of Dar es Salaam as the main market and allows the narrower definition of the national market to be used. The national market is dominated by large-scale actors working with smaller-scale trade facilitators. The market can be characterized by a large number of small-scale producers and local traders, a few large-scale traders who are able to finance transport and marketing costs, and again a large number of small-scale retailers and final customers. Due to the bottle neck of capital required to buy and transport large quantities of goods, the national market is more limited in access than the local and regional markets. At the same time it is also larger in

volume and provides producers with cash income and opportunities for traders to expand their business. Still, the link from the national market of food crops to the international market of processed food products needs developing to ensure the dynamic nature of the market, and possibilities for expansion in the future (Eskola, 2005). The market is dominated by a small number of large traders. Access to the national market is limited to most traders since they require capital and transport to collect large quantities of products from all over the country and to trade it at the market (De Putter, van Koesveld and de Visser, (2007)**).**

3.12.4 Export Market

The export market for cash crops refers to marketing of non-traditional products which have a very limited domestic market (Eskola, 2005). The export market is run only by large traders and they are mostly foreign. The products are mostly unprocessed leaving the Tanzanian farmers only a low profit while the added value is for the export organization (De Putter, van Koesveld and de Visser, (2007)**).** There are relatively few Tanzanian traders engaged in export trade: foreign buyers collect large quantities of goods from established buying centers and transport them to the border ready to be shipped out of the country. Tanzania exports mainly unprocessed agricultural products and little value added from retail and wholesale services or processing stays in the country (Eskola, 2005).

CHAPTER 4

CONCEPTUAL AND EMPIRICAL METHODOLOGY

4.0 Introduction

This chapter gives the conceptual framework for the study. The framework has been developed through literature review of the value chain concept, supply chain concept, agricultural value chain i.e. marketing of agricultural products, and transaction cost economics. The study also benefits from previous value chain studies conducted by ICRISAT in Eastern and Southern Africa, in particular the study presented in the ICRISAT working paper titled "Uunlocking the potential of high-value legumes in the semi-arid regions: analysis of pigeonpea value chains in Kenya" by Shiferaw, Okello, Muricho, Jones, Salim and Omit, published in (2007).

4.1 Conceptual Frame Work

4.1.1 Value Chain Concept

Pietrobelli and Saliola in 2008 define value chain as a full range of activities that firms and workers do to bring a product from its conception to its end use and beyond. This includes activities such as design, production, marketing, distribution and support to the final consumer (Cunningham, 2001). The activities that comprise a value chain can be contained within a single firm or divided among different firms. Value chain activities can produce goods or services, and can be contained within a single geographical location or spread over wider areas.

The concept of value chain has been seen as a development tool that helps in identification of the policies that can be implemented for individual producers and countries to increase their share of the gains (The International Trade Centre (ITC), 2003). It also gives a better understanding of how the sector is performing and contributing to national socioeconomic development. By definition, value chain analysis examines the full range of activities required to bring a product or service from its conception to its end use, the firms that perform those activities in a vertically coordinated chain and the final consumers of the product or service (Kaplinsky and Morris, 2000).

The terms value chain analysis and subsector analysis are sometimes used interchangeably. In case a subsector analysis is envisaged as examining all the firms, channels and markets related to a specific product or service a value chain analysis focusing on a single vertical chain of firms leading to a particular consumer market could be considered complementary to the subsector approach. Value chain analysis often includes additional analytical elements beyond subsector analysis such as inter-firm cooperation governance, and geographic coverage that extends to global markets. Some analysts also make useful distinctions between supply chains and value chains (Shiferaw, et al., 2007).

Supply chain management (SCM) is a method for integrating a manufacturer's operations with those of all of its suppliers and customers and their intermediaries (Tilanus, 1997), where no binding market relationship exists between players (Shiferaw, et al., 2007). It covers the flow of goods from suppliers through manufacturing and distribution chains to the end consumer. SCM seeks to integrate the relationships and operations of several tier suppliers in meeting requirements such as quantity, delivery and the timely exchange of information. Christopher (1992) has suggested that the real competition is not company against company, but supply chain against supply-chain. The value chain concept according to KIT (Royal Tropical Institute), Faida Mali and IIRR (International Institute of Rural Reconstruction) in 2006, refers to a particular type of supply chain where participants actively seek to support each other to improve systemic efficiency and competitiveness. The concept of value chain in this study has been used considering that the level of cooperation among different players in the pigeonpea supply chain in Tanzania is not well developed.

Liberalization provides new opportunities and challenges for poor smallholder farmers in developing countries. However, to take advantage of these opportunities smallholder farmers must be able to participate in productive activities which they have competitive advantage. This implies access to well-organized marketing, distribution and post-harvest systems, effective market information and technologies that allow them to be price and quality competitive. Smallholder farmers face high transaction costs and uncertainty arising from missing or incomplete input and product markets, high access barriers and costs of

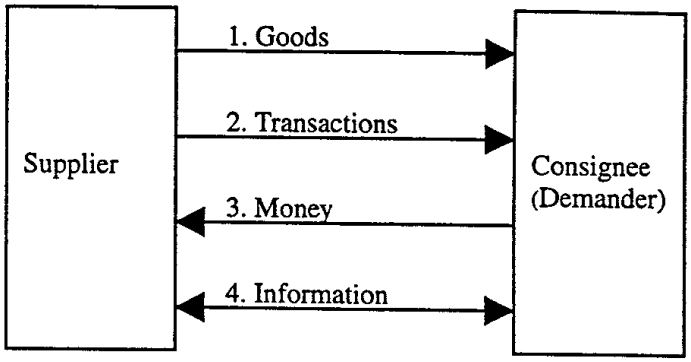
information, and other market imperfections that restrict market access (Jones, Freeman and Monaco, 2002)

Therefore, value chain analysis concept has been used in this study to assess the performance of smallholder farmer markets in terms of structure and functions so as to identify the weak linkages that determine overall competitiveness of the pigeonpea subsector in Tanzania. This provides opportunities to enhance their position in global markets in terms of production and marketing.

The view of how marketing might be organized, either through markets or within transnational firms, is explained by transaction costs economics in terms of the complexity of inter-firm relationships (Williamson, 1975). The study focuses on marketing of pigeonpea under imperfect markets. In this view, the linkages among buyers and sellers are underdeveloped and asymmetric information and mistrust is pervasive. Since the study focuses on the market for pigeonpea based on the study by Shiferaw, et al., (2007) it does not strictly fit the definition of a value chain, therefore the term value chain can be used interchangeably with marketing chain**.**

Organization of a market depends on transaction cost, in the situation where information is not available or can be obtained at a cost, organization as well as markets coordinate economic activities. In any market link information needs to be shared between parties when doing transaction to have efficient and effective value chain that focus on customers need (see figure 4.1). Total value chain cost or total cost of an individual participant can increase when there is lack of information sharing between actors in the vale chain.

Figure 4.1 Product Marketing Link

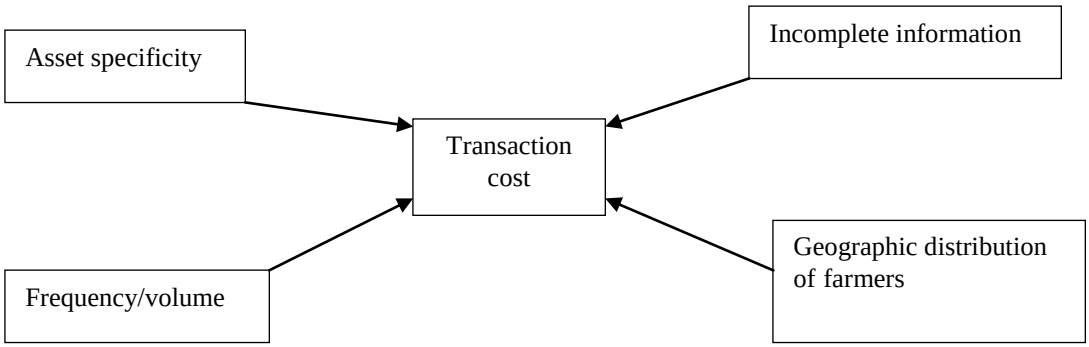


Source: Tilanus, (1997)

The transacting parties can take advantage over by acting opportunistically towards the other parties when there is asymmetry of information. This will increase transaction cost because safeguard has to put in place or need to have coordination (Gerreffi, Humphrey and Sturgeon, 2003). It has been argued that these coordination, or mundane, transaction costs rise when value chains are producing non-standard products, products with integral product architectures, and products whose output is time sensitive (Baldwin and Clark, 2000).

According to Gereffi, Humphrey and Sturgeon, (2003), transaction costs is the costs involved in coordinating activities along the chain. Transactions costs could arise at the production level in the case of finding input suppliers, negotiating the term of purchase, and verifying the quality of input and the sale price. They can also arise from asymmetric information in the process of acquiring credit and hiring labor, which requires monitoring and supervision of hired workers. At the marketing level, transaction costs arise in the process of finding a buyer, negotiating the sale price and verifying the quality of product and reliability of weights (Shiferaw, et al., 2007). These production and market level transaction costs are exacerbated by incomplete information which is causing opportunism behavior, geographical dispersion of the farmers which increase the cost of transportation, frequency or volume of transaction which results into diseconomies of scale, the degree to which the assets needed to complete the exchange are specific to the transaction and other cost that help in carrying out the transaction.

Figure 4.2 Element of Transaction Cost in Marketing of Agricultural Product



Source: Own Construct, (2010)

According to Williamson, the two categories of transaction cost i.e. ex-ante and ex-post transaction cost can be rise from direct opportunity cost and the problem of hidden action which associated with the problem of performance control, performance verification costs, adjustment costs, and bargaining costs in the relationship Buvik, (2002).

4.1.2 Information Cost

Information costs are the costs encountered prior to the transaction and include costs related to searching for and screening potential trading partners and negotiation cost, which include the costs of arranging the trade, drawing the terms of exchange, reaching an agreement on exchange (including the costs of bargaining) (Williamson, 1985) In pigeonpea marketing, the ex-post transaction costs arise from searching of buyers and sellers due to poor access to price and quality information. Therefore such cost may increase when there is incomplete information on market aspects.

4.1.3 Frequency of Transaction

In economic theory, volume needs to be considered when doing a transaction. Scatterings of farmers and frequency or volume in transaction have the effect on the total cost incurred by the parties doing transaction. Transaction which involves large volume makes the parties to enjoy economies of scale through low cost of transportation. Network theorist Powell in 1990, argued that trust, reputation, and mutual dependence dampen opportunistic behavior, and in so

doing they make possible more complex inter-firm divisions of labor and interdependence than would be predicted by transaction costs theory (Gereffi, Humphrey and Sturgeon, 2003).

4.1.4 Asset Involved in Transaction

Asset of a transaction refers to anything that supports a given transaction. It may be specific to a particular transaction. Then it cannot be redeployed in an alternative use without significant loss in value. In a relationship when a firm invests in any asset creates a bind situation that reduces the power in transaction. The asset can be human or physical which facilitates or support transaction.

Organization of a marketing channel is important in the performance of a value chain since it involves many actors. The number of link in a channel, information sharing within the marketing channel and the degree of coordination will determine the marketing costs and margins. The commodity market involves actors such as assemblers, wholesalers, retailers, and the ultimate end users (Shiferaw, et al., 2007)

4.2 Empirical Methods

The study entailed review of literature together with collection and analysis of secondary data. The secondary data comprised of aggregate data on national export from Tanzania bureau of statistics, level of production obtained from DALDO's office and other published sources on the major pigeonpea producing areas in Tanzania.

Information from these secondary sources was augmented with collection and analysis of two primary data sets: farm – level production and post farm level marketing data. The farm – level data was comprised of production data from 613 randomly sampled households from 24 different villages in Kondoa, Babati, Karatu and Arumeru conducted in 2008 and covered the year 2007/2008 cropping season. The post farm–level data include information from a rapid market survey for both green and dry pigeonpea conducted on 42 respondents in Babati District, Arusha town and Dar es Salaam city in 2009 for the year 2007/2008. These intermediaries included rural assemblers, rural wholesalers, urban wholesalers, urban open air retailers, and urban exporters. The rural market intermediaries (primary respondents were

sampled from Babati district while the urban market intermediaries (tertiary respondents) in Arusha and Dar es Salaam were generated from the secondary respondent) in Babati district.

Marketing costs were taken to include both transaction costs and standard marketing costs (transport, assembly, grading/sorting). Measured transaction costs included the reported costs of finding a buyer/seller, costs of monitoring/inspecting the quality of grain being traded, and costs of negotiating prices. While exchange is through contractual arrangement, the costs of reaching an agreement and monitoring and enforcing the term of the contract all constitute transaction costs. The standard marketing costs considered in this study included the costs of assembling the produce, grading/sorting, transportation, and storage, among others,

The standard marketing costs included transport costs incurred during both buying and selling activities, i.e., transport from seller to store and from store to buyer. In addition, marketing costs included costs paid for labor to clean the grain, storage costs, loading and offloading costs, security/watchman costs, council charges, shelling costs (for vegetable pigeonpea), processing costs, packaging costs, custom clearing costs for exporters, and bank charges. Most of these costs have associated indirect implicit costs in completing transactions. For instance, the costs of assembling produce in the rural areas are a standard marketing cost. However, it entails searching for a seller, negotiating the price, and inspecting the quality of the produce offered for sale, which are all components of transaction costs. Likewise, transportation costs (which is standard marketing cost) often encompasses costs of inspecting that the consignment received has same weight, volume, and content as the one dispatched (which are transaction costs). Despite the difficulties in disentangling these costs, an attempt was made to elicit the direct cash outlays as well as the indirect costs in terms of time used and phone calls made to acquire information, find buyers/sellers, negotiate, and conduct transactions (Shiferaw, et al., 2007).

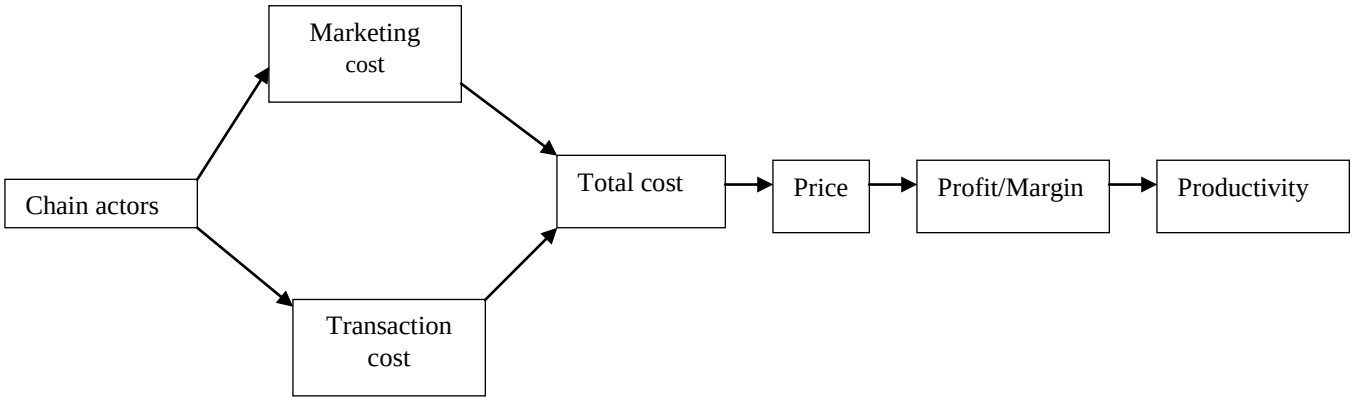
According to Shiferaw, et al, **c**ost is the factor that influences the price in the market value chain. In competitive market, price is one of the factors that need to be taken into consideration. Apart from basing on the cost aspect in the value chain, a study also looks at price as an important factor. Despite of other factors (such as sex of respondent, access to

information, access to transport, frequency of transaction, market type, quality, seasonality of transaction, buyer type, education level, years of experience in the business and quantity), cost can influence the price of a commodity in the market and this can reduce the margin of a participant. Once the margin becomes low, output reduces in the coming years and the level of poverty increases among producers.

Based on the theory of transaction cost, production and marketing of pigeonpea is associated with both variable and fixed costs. Total variable costs of marketing pigeonpea include marketing costs, and transaction costs. According to the new institutional economics, fixed costs include the costs of identifying, negotiating, and concluding an exchange (Williamson 1985; Nabli and Nugent, 1989).

In order to analyze the marketing chain, cost and net marketing margin model have been used. The actors in a marketing chain of pigeonpea are facing two different types of cost at it is shown in the diagram below. In order for smallholder farmers to improve productivity and face global market competition, the chains costs need to be minimized so as the price of the produce can be competitive, since we know that price is one of the factors that can make firm to be competitive. According to the concept of logistics, cost should not be minimized at the experience of quality. There is a need to look at how to reduce costs in a chain by looking at all the costs associated with the marketing value chain of pigeonpea. This can increase the farmer's margin in a chain, they will produce at a lower cost and sell at a reasonable price which covers all the expenses spent in production.

Figure 4.3 Agricultural Marketing Chain Model



Source: Own Construct (2010)

Total cost refers to marketing costs (which involves payments to agent, transport cost, loading and offloading charges, cleaning cost, storage cost, tax charges, cost of buying bags) and transaction cost (which involves seller search cost and weight loss after cleaning).

Net marketing margin refers to marketing margin (which is the difference between selling price and buying price) less total cost.

CHAPTER 5
RESEARCH METHODOLOGY

5.0 Introduction

The chapter presents research methodology for the study. In particular, the chapter explains the research design and the selected procedures for testing the variables. It also describes location of the study area and the determination of sampling framework from the population. In addition to that the chapter explains the instrument used to collect data and data collection techniques and problems faced in data collection.

5.1 Research Designs

Choosing an appropriate design for a research study entails a careful consideration of the features of the phenomenon under investigation. Such features dictate both the type of empirical data as well as the method that is going to be applied in the analysis (Aaker, et al., 2002; Gupta 2003; Hannås, 2007). In this study descriptive analysis has been done to analyze the value chain of pigeonpea in Tanzania with the use of collected data through the survey done to participants in a value chain from the study area to the downstream of the value chain.

5.2 Methodological Issues

This work employs two methodological approaches. The first approach is a conceptual one that aims at addressing research issues tackled by this work. This was done by the use of secondary data. The second approach involved the collection of relevant primary data. This was done through the use of a survey of traders in the value chain of pigeonpea in Tanzania.

5.2.1 Secondary Data

Secondary data was collected from government reports produced by District Agricultural and Livestock Development Officer (DALDO), Ministry of Agriculture (MA), Bureau of Statistics and Selian Agricultural Research Institute (SARI) different organizations and institutions such as United Nations Conference on Trade and Development (UNCTAD), Us Agency for International Development (USAID), International Crops Research Institute for Semi-Arid Tropics (ICRISAT), United Nations (UN), World Bank (WB) and International

Monetary Fund (IMF), past dissertations, and other agriculture documentations. Data collected by ICRISAT in collaboration with SARI make the major contribution in this study.

5.2.2 Primary Data

Primary data for value chain analysis of pigeonpea in Tanzania was collected by the author with support from ICRISAT- Nairobi and SARI- Tanzania. Data collection was conducted in Babati District in Arusha region which is the main pigeonpea producing district in Tanzania. Thereafter, the survey followed the marketing value chain to Arusha municipality and finally to the national capital Dar es Salaam. The aim was to interview traders who are dealing with buying and selling of pigeonpea (see map 5.1).

5.3 Research Setting

5.3.1 Location of the Site

The population of Tanzania is about 42 million (World Bank, 2008) with more than 130 tribes. It has twenty five regions; twenty regions in the mainland and five regions on Zanzibar Island.

Map 5.1 Tanzania Map Showing Location of the Survey Area

Source: Google Map, (2010)

Tanzania's climate varies from tropical along the coast to temperate in the highlands. The terrain of this country is plain along the coast, with plateau in the central region and highlands in north and south. Tanzania's climate is favourable for the growing of pigeonpea. Pigeonpea is growing in several parts of the country. The major growing areas are Lindi and Mtwara Regions in the Southern Zone; Kilimanjaro, Arusha and Manyara Regions in the Northern Zone; and Shinyanga Region in the Lake Zone. The crop is also important along the coast, Dar es Salaam, Tanga and in Morogoro Regions in the Eastern Zone where it is used mainly as a vegetable (green peas). About 14 districts in these major producing regions are primary producers mainly located in the Southern and Northern Zones of the country. However a number of the districts along the Coastal Zone also grow pigeonpea though not intensively. In the primary producing districts, pigeonpea is mainly harvested and consumed or sold as dry grain while it is mainly harvested at green stage and consumed as a vegetable (green peas) in the secondary production areas. In the Northern Zone districts including Babati, pigeonpea is mainly grown as a cash crop. (Shiferaw, Silim, Muricho, Audi, Mligo, Lyimo and You, 2005). Babati District was selected as a sample district in this study because it is a major grower of pigeonpea in Tanzania with Hanang District as a distant second. Also in Babati District farmers are growing pigeonpea as a cash crop (Technoserve - TA & ICRISAT/SARI, 1990's).

5.4 Sampling and Data Collection

The primary goal of a research is to get representative data. To achieve this, we need to either enumerate the whole population or select a representative sample. Such that the researcher can study the smaller group and produce accurate generalization about the larger population (Newman, 2003). Determination of the sample is not an easy task. It is subjected to several factors. Such factors include the type of sample, statistic to be applied, homogeneity of the population, time, money, and personnel availability for the study (Churchill and Iacobucci, 2002). Care must be taken to ensure the sample is not biased, i.e. some types of study objects (like people) are not more likely to be sampled than others. In our case we have not done so. Brokers and rural traders are underrepresented, or downstream actors are overrepresented. It is possible to compensate for that through appropriate weighting of the data.

In Tanzania there exists no documentation of farmers and traders or middlemen/brokers dealing with pigeonpea. In order to get the chain of pigeonpea marketing, we needed to start from the source with the farmers who produce the crop and follow the value chain downstream from them. Farmers who sell at the farm gate invariably rely on itinerant assemblers/brokers who visit their villages during the harvesting season. Information about these assemblers/brokers could therefore be collected at the village level. In our case, we collected this information from farmers' self-help groups in a random sample of villages drawn from a list of all pigeonpea-producing villages in Babati district (see appendix 1) Information about the self-help groups that are found in the villages was provided by DALDO – Babati, non-governmental organizations and Gendi farmers cooperative office in Babati. This enabled us to assemble the list of farmers groups and their original village (see the list in appendix 1).

By using the snowballing sampling procedure which is common for social network studies, a random seed sample from the farmers groups dealing with pigeonpea was selected in targeted villages in Babati District. The groups were asked to identify the four most important pigeonpea brokers and traders who were operating in their villages. (This constraint was rarely binding – in most cases the groups listed all the assemblers/brokers they knew who were operating in their villages) (See appendix 1, table 8.1). In the terminology of this procedure, the groups were "primary respondents", and those who were sampled from the groups' responses, were "secondary respondents". Secondary respondents were selected randomly from the list of names generated by group interviews (see appendix 1, table 8.2). Then "tertiary respondents", were downstream traders identified by secondary respondents. At the tertiary level, we include all the downstream traders identified by the secondary respondents; their numbers were decreasing geometrically as we moved downstream.

After interviewing the secondary respondents, we had a small number of tertiary respondents, and the number shrank further as we tried to track them down. It turned out many names actually represented the same company. So we ended up with very few traders representing the final link between traders and urban consumers or exports.

For traders in green pigeonpea we used opportunistic sampling, whereby we interviewed all the traders selling green pigeonpea that we happened to find in the open-air markets we visited in Arusha. This opportunistic sampling procedure is often used for surveys of informal markets.

5.5 Data Collection Techniques

In the use of survey across the sample elements we used a semi-structured questionnaire to collect information regarding the marketing value chain of pigeonpea in Tanzania. The questionnaire was administered through physical visits to respondents' localities and face to face oral interviews.

5.6 Research Instrument

The research instrument used by ICRISAT in Nairobi for value chain study was adopted with some changes to suit this study. The research instrument was modified before start the actual interview, since there were no green pigeonpea trading activities in Babati, and then we modified to fit for the available crop. As we moved on to Arusha in open air market, we used the same questionnaire for green pigeonpea. The questionnaire was modified after discussion with research team (member from ICRISAT, SARI, Research supervisor and I) and the final questionnaire was developed for the main survey.

5.7 Questionnaire Administration

There are number of methods that can be used in questionnaire administration. These methods include personal questionnaire administration, mail administration, telephone and electronic surveys (Mwakibinga, 2008). Selection of any of this method may have effect on the data quality. Data quality is a vague concept and there is no agreed definition. It could be defined in terms of survey response rates, questionnaire items response rates, the accuracy of responses, absence of bias or completeness of the information obtained from the respondents (Bowling, 2005). In the view of Bowling (2005), the researcher has to consider data quality when selecting a questionnaire administration method. However, selection of any administration method does not depend solely on data quality but also on time, cost and supporting infrastructure (Mwakibinga, 2008).

The main interest of this research was to interview pigeonpea traders. In selecting how to administer questionnaire certain things have to be taken into consideration like the characteristics of the respondents, in Tanzania pigeonpea traders are characterized by high mobility as they travel to different places searching for products to buy and sell (i.e. they are not found in one place), accessibility of respondents such as infrastructure i.e. in some parts there is poor infrastructure and high costs in terms of communication by internet and lack of contact/address in rural areas and also the literacy rate for example other professional traders may have difficulties in expressing themselves in writing and reluctant to complete a form made the option of internet and post address not to be used. Therefore, face to face interview seem to be the more relevant to the study which was done in Babati, Arusha and Dar es Salaam. Looking at mobility factors, in order to get these traders the best option was to follow them in their business. Interview was started with the help of Extension Officers in different wards or villages by contacting and organizing farmers groups and traders/brokers in their areas. Moving from primary respondents, we increased the rate of response by negotiating appointments to following their timetable to reduce inconvenience. Sometimes we also left the questionnaire for familiarization before the day of interview. This was done to reduce interview time since traders had no time to spend and they had to look at their statistics before the interview. The summary of data collection is given in the table 5.1.

Table 5.1 Summary of the Outcomes for Data Collection Process

Type of pigeonpea	**Type of Traders**	**Sampling Procedure**	**Number of Questionnaire**	**Not Interviewed**	**Reasons**	**Percentage**
Dry pigeonpea	Brokers	Sampling procedure (snowballing)	29	0	-	100
	Traders	Sampling procedure (snowballing)	9	2	-Unwilling	77
Green pigeonpea	Wholesalers and retailers	Interviewed all (opportunistic sampling procedure)	8	2	-Unwilling -Had a stall, but was not around	75
Total			46	4		91.3

Source: Field Survey, (2010)

5.8 Challenges Faced in Data Collection

In interviewing traders we were faced with the challenges of making them to sit down for interview because they were so busy and they don't have time. We managed to interview them by following their timetable and reduce the time of interview by distributing questionnaire early to get familiar with the questions. Another challenge was that, traders fear to release their business information because of competition within the business environment. Also most traders do business without paying tax, by asking them about their business information they feared that we were coming from Tanzania Revenue Authority to investigate them. Therefore in order to overcome these challenges, we used people from the government offices such as DALDO and SARI to introduce us and lessen the fear they have.

CHAPTER 6
RESULTS AND DISCUSSION

6.0 Introduction

The previous chapter discusses the research design and methodology for this study. This chapter proceeds with data analysis and discussion of the results obtained from the survey done in Tanzania 2009 for the year 2008/2009. The analysis was based on the conceptual framework developed in the previous chapter. Discussion of the study made use of transaction cost theory and reviewed literatures.

6.1 Socio-Economic Characteristics of Pigeonpea Business

In Babati farmers have organized themselves in groups during production of pigeonpea but they are marketing their products individually to different participants in the value chain. There are no developed societies dealing with marketing of pigeonpea. The production of pigeonpea involves both women and men while marketing of dry pigeonpea is dominated by men, only 4.5% are female. The green pigeonpea marketing is done by only women in an open air market (see table 6.1). According to Eskola, (2005) description of the characteristics of different pigeonpea markets in Tanzania, the reasons that makes women not to participate in trading of dry pigeonpea are lack capital to do business due to lack of information about credit and high interest rate that limit their access to credit, fear not to pay back on time since they use business money to take care of the family because of lack of education to separate business and private economy.

Table 6.1 Sex of Respondents (in %) in Pigeonpea Business

		Sex of Respondents in Pigeonpea Business				
		Green Pigeonpea		Dry Pigeonpea		
		Urban Wholesaler	Urban Retailer	Rural Assembler	Urban Wholesaler	Urban Exporter
Rural Market	Male	-	-	91	50	-
	Female	-	-	4.5	-	-
Urban Market	Male	-	-	4.5	50	100
	Female	100	100	-	-	-
Total Number		**2**	**4**	**22**	**10**	**5**

6.1.1 Level of Education

The level of education in business is very important. The knowledge that the participant has can help in planning for their business. In pigeonpea marketing the level of education differs for most of respondents in both markets, from primary school i.e. 0-7 years, secondary school 8 – 13 years and college education 14 years and above. 80 % of the participants who are owner managers of the pigeonpea in Babati have no more than primary education and 40% based in Babati town and no participants in the third market (Arusha) and fourth market (Dar es Salaam) found to have only primary school education. In the third market (Arusha) and fourth market (Dar es Salaam), all participant falls in the college level (see the table 6.2). This shows that most of participants in the downstream of the value chain have high level of education than participants in the upstream of the value chain. This increases their ability in planning for their business.

Table 6.2 Level of Education in Pigeonpea Marketing

		Market Chain			
		First Market (Babati rural)	**Second Market (Babati town)**	**Third Market (Arusha)**	**Fourth Market (Dar es Salaam)**
Education in Years	0-7	80	40	-	-
	8-11	12	40	-	-
	12-13	8	-	-	-
	>14	-	20	100	100
Total (%)		**100**	**100**	**100**	**100**
Number of Observations		**26**	**5**	**2**	**3**

6.1.2 Experience in the Business

Years of experience varies from market to market with less experience participants found in the first market in Babati town with less than 7 years of experience. While in the third and fourth market participants have more than 8 years of experience (see table 6.3). This shows that in order to operate in a downstream of the value chain and face the business challenge, education and years of experience are important.

Table 6.3 Experience in Pigeonpea Business

		Market Chain			
		First Market (Babati rural)	**Second Market (Babati town)**	**Third Market (Arusha)**	**Fourth Market (Dar es Salaam)**
Years of Experience in Pigeonpea Business	0-3	15	-	-	-
	4-7	30	20	-	-
	8-11	27	40	50	66.67
	12-15	12	-	50	-
	16-19	4	20	-	-
	20-23	12	20	-	33.33
Totals (%)		**100**	**100**	**100**	**100**
Number of Observations		**26**	**5**	**2**	**3**

6.2 Roles of Respondents in Pigeonpea Business

According to the respondent's information, it was discovered that, the management of the pigeonpea business depend on the size of an enterprise. The smaller the size of the business the higher the likelihood of it being owner-managed. Looking at the size of the business in a value chain, the sizes increases when moving downstream of the value chain. The percent of owner managers decreases from rural assembler's business which is 90% to 80% for urban wholesaler and 40 for the urban exporter's business. A move down the marketing chain, the management of the business changes to hired Managers, Crop Procurement Manager and Directors (see table 6.4) According to the survey, apart from pigeonpea business the participants in the marketing chain are trading other crops such as maize, beans, sunflower, lablab, finger millet and wheat and they operate in more than one point in the country. This shows that most of the downstream participants are organized and concentrated in other businesses than the participants who trade in upstream part of the value chain which contributes to the high level of education and experience in doing business. Diversification increases the size of the business and help in catering of loss in profit that may occur due to different factors such as price fluctuation.

Table 6.4 Role of Respondents (in %) in a Business

		Green Pigeonpea		**Dry Pigeonpea**		
		Urban wholesaler	**Urban Retailer**	**Rural Assembler**	**Urban Wholesaler**	**Urban Exporter**
Role of Respondents in the Business	Owner Manager	100	100	95	80	40
	Hired Manager	-	-	5	10	40
	Procurement Manager	-	-	-	-	20
	Director	-	-	-	10	-
	Total Percentage	**100**	**100**	**100**	**100**	**100**
	Total Number of Respondents	**2**	**4**	**22**	**10**	**5**

6.3 Employment in Pigeonpea Business

According to the market survey it shows that, in Babati rural apart from the owner managers, pigeonpea business is not employing many people. In the whole value chain the total number of people employed in the pigeonpea business is 31 who get monthly salary and 42 owner managers who work for their business. The total number of people employed in the total sample is 73 people for both green and dry pigeonpea which includes self employed owner managers. Only 15% of people in the sample dealing with pigeonpea business are employed in the rural area (see table 6.5). Since the small number of people are employed in the rural area, this contributes to rural – urban migration and increase the level of poverty among the people living in the rural area.

Table 6.5 Employment in Pigeonpea Business

		Green Pigeonpea		**Dry Pigeonpea**		
		Urban Wholesaler	**Urban Retailer**	**Rural Assembler**	**Urban Wholesaler**	**Urban Exporter**
Number of Permanent Employees	Rural Market	-	-	16		-
	Urban Market	-	-	26	44	58
	Number of Owner Managers	100	100	58	56	42
	Total Percentage of Employees	100	100	100	100	100
	Total Number	**2**	**4**	**38**	**18**	**12**

6.4 Asset Ownership

Assets are most important when doing agricultural business for supporting activities. The business involved moving the product harvested from the farm gate to the warehouses or store; to the market and finally to the end users and communication between the buyer and the seller. There are assets that needed to facilitate all activities involved in the whole process in value chain up to when the product reach the end users. These include mode of transport, warehouse/ store and their facilities such as weighing scale, office, and assets used for communication like TV, radio, internet and telephone (see table 6.6).

Table 6.6 Asset Ownership (in %) in Pigeonpea Business

Assets Owned for Pigeonpea Business		Dry Pigeonpea		
		Rural Assembler	**Urban Wholesaler**	**Urban Exporter**
Transportation	Truck	18	90	100
	Motorcycle/Bicycle	72	80	20
	Ox-cart	9	10	0
Storage facilities	Warehouse owned	73	50	80
	Weghing scale owned	9	50	60
Communication facilities	TV	27	10	20
	Radio	23	30	-
	Internet	-	30	100
	Mobile	91	100	100
	Landline	4.5	40	100
Total Number of Respondents in a Business		**22**	**10**	**5**

6.4.1 Mode of Transport

The modes of transport are important to move products from the farm to the point where the product gets into contact with the consumer in a value chain. In the pigeonpea value chain, according to the survey, the modes of transport used when buying and selling dry and green pigeonpea are truck, tractor, bicycle/motorcycle, ox-cart, head lots and public transport which is the most mode of transport used by small traders dealing with green pigeonpea in an open air market. The modes of transport used in moving dry pigeonpea from the farmers in Babati are ox-cart, truck, tractor, bicycles/motorcycle and trucks, but when moving down to the value chain the mode of transport that is mostly used is truck (see table 6.6). Urban exporter use 100% truck and no ox-cart is used while only 20% is for Motorcycle/Bicycle for exporter in Babati. This can be explained that, in the upstream of the value chain, farmers are scattered and produce small quantity of pigeonpea. Therefore it is expensive for a farmer to hire truck to transport small quantity of pigeonpea from the farm to the warehouse/store or direct to the market place.

In the first market in Babati rural the mode of transport preferred is bicycle and motorcycles because of the simplicity and its economical to move and collect small quantities of pigeonpea from individual farmers. Trucks are used when assembler collects enough quantity of pigeonpea from different individual farmers and then transport it to the urban market or to the exporter market. From this point, the issue of storage facilities comes in when the participant wait to sell until the price increases.

6.4.2 Storage Facilities

Warehouse/store is used to keep harvested product before sale. In Babati, each village owns village warehouse which in some places is used by SACCO's members for example in Gendi and Gallapo. Most of these warehouses were not used by farmers to keep their produce. Farmers use individual warehouse/store to keep small quantity of pigeonpea after harvest, when moving downstream of the value chain many participants own more than one warehouse in different buying points. This increases the total cost in the value chain by managing individual warehouse. Also it is uneconomical to market dry pigeonpea individually while every village owns warehouse and not used for the purpose of storing crops. This is caused by poor organization of farmers in upstream of the value chain. Keeping together crops in a common warehouse/store will reduce the cost of storage facilities like using chemicals to treat against weevil damage and transportation cost from the individual warehouse to the sellers. When managing one shared/common warehouse/store, farms can enjoy the economies of scale.

In rural market, farmers don't use weighing scale to measure their produce before they sell. Most of the farmers use bucket and approximate the weigh to 20 kilograms (as it is shown in the table 6.6 above). This is very risky to both the seller and the buyer since this represents a very imprecise approximation of the actual weight. Others use their own weighing scale and incurs maintenance cost every month and while others who do not own warehouse incur cost of renting warehouse.

In urban market like Arusha specifically National Milling Company, where participant rent warehouse called ¨godown¨, they have common facilities such as weighing scale. 50% of urban wholesaler use rented warehouse and 50% use owned warehouse (see table 6.6). In

downstream of the value chain the weight of pigeonpea is measured by weighing scale, therefore 50% of urban wholesaler use owned weighing scale while only 9% of rural assembler own weighing scale in rural market. For rented warehouse, once the pigeonpea arrives they measure directly before put in the warehouse. The cost of maintaining weighing scale is shared among all users in the godown/warehouse.

6.4.3 Communication Facilities

Apart from having all the assets to facilitate the business, communication facilities such as TV, radio, internet and telephones are most important for a business enterprise to grow. There are many ways in which a business enterprise can get required information such as prevailing market price and quality requirement by the end users. The reliability among all means of communication differs. Tollens, 2006a; and Weber, Donovan, Staatz and Dembélé, (2006) suggest that modern Information and Communication Technology (ICT) tools should be used, but radio is likely to remain the most effective means to help improve the bargaining power of farmers. With the very rapid expansion of cell phone ownership (Tollens, 2006a), especially in rural areas in Africa (Tschirley, 2007) the tools could be useful in getting information. In the first market, over 91% of participants use mobile phone for communication and 100% for the remaining market points while only 23% or the first market participants use radio. This shows that, in rural market not all participants access market information through mobile phones, but others get information from radio and through their neighbors who have mobile phones. Weber, et al., (2006) suggest that modern Information and Communication Technology tools should be used, but radio is the most effective means of providing broad-based unbiased information to help improve the bargaining power of farmers. Since the participants in the upstream of the value chain have low access to the biased means of communication and they are far from the end user to be updated on the situation in the market, they can be faced with the problem of opportunism as it was discussed in the transaction cost theory. Therefore, by using unbiased tool to get market information, it will avoid the problem of opportunism that may occur during the process of trading.

6.5 Market Structure of Dry Pigeonpea

In the northern zone districts including Babati, pigeonpea is mainly grown as a cash crop. Traditionally, the farmers in the northern zone prefer to consume other legumes such as beans and cowpeas while their counterparts in the southern zone districts lack these alternative food sources and therefore use a larger share of their pigeonpea produce for home consumption. The quality of pigeonpea from the northern zone districts is also considered to be superior and hence more suited for the export market, especially the large and white colored grains grown in Babati (Shiferaw, Silim, S, Muricho, Audi, Mligo, Lyimo, You, and Christiansen, 2005) Therefore the pigeonpea produced in Babati is targeted at the export market.

The market structure of pigeonpea in Tanzania is a not a direct structure as defined by Tilanus, (1997) in the previous chapter since the farmers do not sell directly to the end users/consumers. There is only company which has direct connection with the farmers. The company provides seeds to the farmers and provide training and other assistance up to the time they harvest. This is done to meet the requirement of the European market. The common chain used for dry pigeonpea involves intermediaries such as brokers/middlemen, traders and exporters before reaching to the end consumer.

The farmers are not organized, they sell pigeonpea individually, and there are no organizations or collective action when selling pigeonpea. In the period when farmers start harvest, brokers/middlemen and traders, visit individual farmers and buy pigeonpea available at that particular time from a particular farmer and collect from different farmers to get the quantity needed by the market or according to their available capital. These brokers/middlemen and traders are connected to the big traders and exporter in the urban market. They are used as a bridge to connect the farmers and exporters in the value chain. They have more information about the demand and the price of pigeonpea in the urban market and the quality of the pigeonpea needed by the market. They are agents to the actors downstream of the value chain, that is the big traders and exporters. In Babati pigeonpea is passes through this route before being exported. The downstream traders are buying large amounts of pigeonpea, by collecting/consolidating pigeonpea from different middlemen and

brokers who are their agents in this business. Some of the brokers/ middlemen get an advance from the exporters to buy the quantity and quality required by the market.

Traders are not specialized in doing pigeonpea business alone, they diversify their businesses and engage in other crops because the season for harvesting differs from crop to crop. The selling period for pigeonpea takes almost 6 months from July to December. Participants don't want to store for a long period due to fear of the risk that the stored produce may be damaged and/or decline in price or loss due to poor quality.

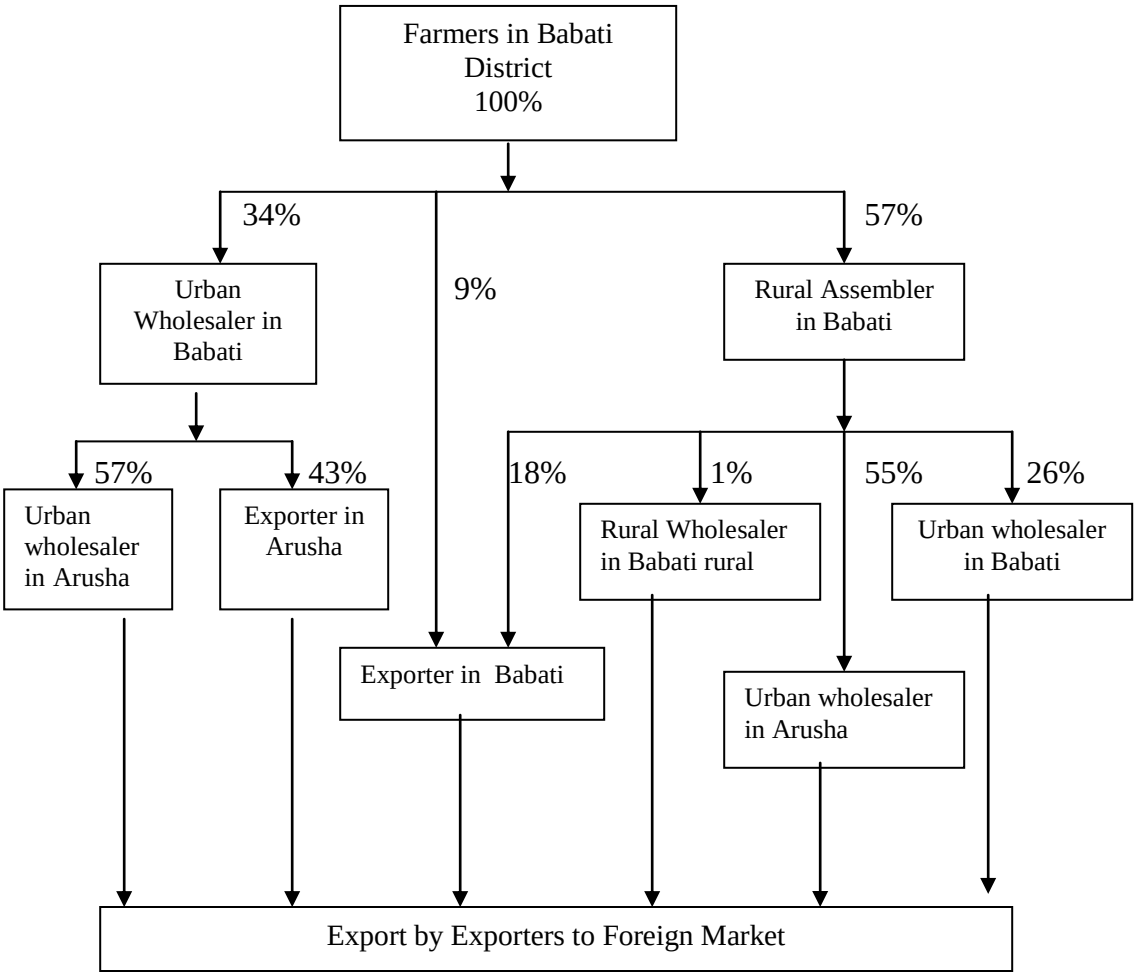
Currently according to findings most of the pigeonpea produced in Tanzania is exported unprocessed. But there are plans to process pigeonpea before exportation as they have already built the plant in Dodoma for processing of dry pigeonpea to dhal. Through the industry, people will be employed and also the pigeonpea market will expand, which at the end will improve the standard of living of farmers and workers in the industry and this will have multiplier effect within the area. As this will increase the government foreign exchange income through export, tax and other revenues.

In a value chain of pigeonpea, we identified 3 main types of participants/ actors i.e. Brokers/traders (wholesalers and assemblers) and exporters. The actors differ in size and capacity from the upstream to the downstream of the value chain (see table 6.4).

Table 6.7 Value Chain Participants and their Functions

Participants	Percentage of the Total Traders	Functions in the Value Chain
Traders/Brokers	55	They work both in urban and rural market. This includes rural assembler, retailer, rural wholesaler and urban wholesaler. They collect pigeonpea from individual farmers (rural assembler) and sell to the traders or exporter. Sometimes they act as an urban wholesaler whereby they buy pigeonpea from the fellow traders/brokers and they sell to exporters in urban market (Babati and Arusha). They constitute large number of participants in the upstream of the pigeonpea value chain.
Exporters	60- 80	Mostly work in urban market and use the agent to collect from the rural market. They buy from the brokers, traders in upstream of the value chain and sometimes direct from the farmers with special arrangement such as providing seeds and training on how and when to plant according to the market demand. They are small in number but they have high purchasing power.

Figure 6.1 Value Chain for Dry Pigeonpea



Source: Field Survey, (2009)

6.5.1 Participants in Dry Pigeonpea Value Chain

The pigeonpea value chain involves different actors/ participants. The main actors/participants in a value chain includes assemblers, wholesalers and exporters who operate in rural and urban market both in Babati, Arusha and Dar es Salaam.

The upstream part of value chain for dry pigeonpea starts from the farmers in Babati as shown in the figure 6.1 above. The farmers sell dry pigeonpea to rural assemblers and urban wholesalers in the rural market (Babati rural) where the buyer incur transaction cost and in urban market (Babati urban) whereby farmer incur transaction cost because farmers have to

incur transportation cost to the market. The functional roles of different actors/participants in bringing a product from the farmer to the end point of the value chain are discussed below.

6.5.1.1 Assemblers

Assemblers in the value chain is collects/consolidate pigeonpea from individual farmers in Babati villages and sells to the rural wholesalers, in Babati rural, urban wholesalers in Babati rural and Babati town, urban wholesaler in Arusha and urban exporter in Babati (see figure 6.1 above). Assembler buys a large share of dry pigeonpea than the urban wholesaler because they cover a largeer area. In 2008/2009, 55% of pigeonpea purchase was by urban wholesalers in Arusha. Assemblers have direct contact with the farmers, they negotiate price and act as an intermediaries since they are used as an agent by wholesalers and exporters in Babati, Arusha. According to the survey, they represent 80% of all traders/brokers in the upstream of the value chain in Babati. They connect farmers with other actors/ participant in the downstream of the value chain. The modes of transport used are mostly bicycles, motorcycles, ox-carts and tractors within the village and trucks when collected enough pigeonpea is taken by truck to the urban market (see table 6.6 above).

Assemblers are of two types, those who collect and sell within Babati village, (the buyer incurs transaction cost) and those who collect and sell in Babati town market to wholesalers and exporters from Babati town, Arusha and Dar es Salaam, whereby assembler carry transaction cost from the farmer to Babati town and down to the value chain. The assembler who sell again within the village as it is shown in the figure 6.1 above that, they sell 1% of the dry pigeonpea to rural wholesaler within the rural market without adding value to pigeonpea thereby incurring create double handling cost which increase the total value chain cost. This results due to lack of enough capital to transport dry pigeonpea to the urban market which make them to postpone sales and then sell in the same market place when get better price. This elongates the chain and make it more complex. According to Tilanus in 1997, the assembler who buy and sell without adding value have to be bypassed so as to reduce the total cost in a value chain and be competitive in the market by setting low price of the produce.

Assemblers use of mobile phone to get marketing information when they search for buyers and sellers. Since farmers are not organized, the only way to get them is by the use of mobile phones or spend time to move around searching. This also increases the cost in the value chain in general.

Assemblers face the problem of lack of capital to operate the pigeonpea business especially when he or she is using his own capital for the business, therefore he buys less quantity as compared to what is demanded by the downstream actors due to lack of information and knowledge about credit. An assembler, who works for big traders in urban market, gets money in advance to buy pigeonpea for sale to wholesalers and exporters. The money facilitates the business and increase the capacity to buy more quantity. The volume consumed by an assembler who uses his own money is small compared to an assembler who get advance from the actors in downstream. Both own individual storage facilities and means of transport like bicycle, motorcycle and some own trucks and ox-cart. Assemblers who work as an agent to the big traders have higher bargaining power because they buy large quantity.

6.5.1.2 Wholesaler

Wholesalers are of two types i.e. rural wholesaler originates in Babati rural and urban wholesaler originates in Babati town and Arusha. Urban and rural wholesaler operates both in Babati rural, Babati town and Arusha. In Babati rural wholesaler buy from individual farmers and rural assembler where by urban wholesaler carry transaction cost. In Babati urban, rural wholesaler buys from individual farmers and rural assemblers and in this case the individual farmers and rural assembler carry transaction cost. The amount of pigeonpea bought by the urban wholesaler in Babati rural direct from the farmers is 34% and sold to urban exporters in Arusha and urban wholesaler in Arusha. In the value chain, the urban wholesalers in Arusha get 57% of the total amount bought by urban wholesaler direct from the farmers while 43% bought by the urban exporters in Arusha (see figure 6.1 above) according to field survey.

A wholesaler has direct contact with individual farmers and urban assemblers in the upstream of the value chain and in downstream has the direct contact with the exporters in Arusha. Wholesalers have bigger capacity than assemblers since they work as an agent to exporters and get money in advance. They use trucks within Babati village and Town. They take

pigeonpea from assemblers bough from both rural and urban market. Since assembler work in the large area they buy more than wholesalers.

The wholesalers use mobile phone to get in touch with the sellers and the buyers too. The cost incurred by the wholesaler is high since they move from one village to another searching for sellers and there is no any market place that all traders are located. Here the issue of frequency of transaction and experience in the business can reduce this cost since relationship among traders can reduce the cost.

Wholesalers are faced with the problem of lack of capital for their pigeonpea business especially when they use own capital for the business, because the capital used is small therefore they buy less quantity. This contributed by lack information, knowledge about credit, high interest rate and fear to take credit because the business is too risky and unpredictable in price.

Wholesalers who work as an agent to urban exporter in Babati, Arusha and Dar es Salaam, they get advance money to assist in facilitating the business by increasing their capacity to buy more quantity and this increase competition in the pigeonpea business. The volume purchased by wholesalers who use their own money is small compared to wholesalers who get advance from the actors in downstream.

6.5.1.3 Exporter

As one moves from the upstream of the value chain the number of actors decreases. Exporters in the pigeonpea value chain appear to be at the downstream near the customer. Therefore their number is small compared to the number of actors in upstream of the value chain. Exporters originate from Babati town, Arusha and Dar es Salaam. They use wholesalers and assembler as an agent to the business; they give money in advance to collect pigeonpea on their behalf. Exporter buying pigeonpea from the wholesalers and assemblers both in Babati rural, Babati town and Arusha and sell to Indian, European and Kenya markets. In this study only exporters who are buying pigeonpea produced in Babati in the year 2008/2009 and moves through Babati town down the value chain were considered.

In the value chain exporters have direct contact with the wholesalers and assemblers and small percent by the farmers in the upstream and consumers in the export market also they are well informed on market information about the price, time and quality needed in the export market. Exporters demand the quality needed by the market, in case farmer sell low quality pigeonpea such as unclean seeds or with foreign matters wholesalers and assemblers reduce kilograms to cover the cost of cleaning. The reduction varies from 1 to 10 kilograms in a bag of 115 kilograms depending on buyers' estimation. Since exporters are few in number, they may be able to exert monopsony (or oligopsony) power in the value chain. This may increase their bargaining power in price setting. The price of pigeonpea is dictated by the consumers, the price per kilogram does not take into consideration the cost of production.

Exporters have more than one business and they are getting money from banks to run their business inclusive pigeonpea business and have branches in Babati town, Arusha and in Dar es Salaam. They carry transaction cost from the point of buying to the export point. Once they buy pigeonpea they can also incur cost of cleaning in case of the high demand market like Europe. For Indian market they satisfy the market by the quality obtained from the Wholesalers and assemblers.

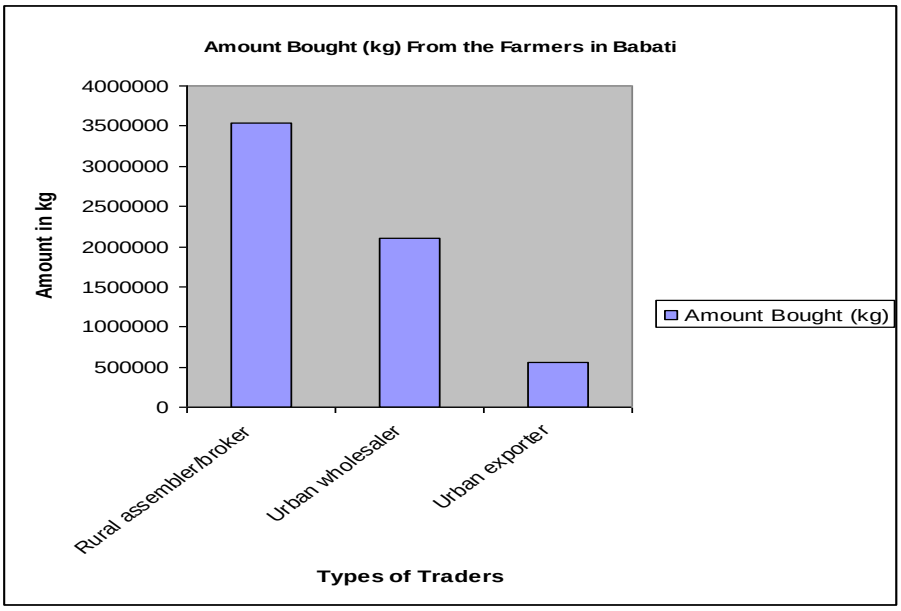
The use of mobile phone is more important to exporter in getting domestic market information and internet service when searching for buyers in the foreign market. Since they are big traders, they have access to internet, fax, landline and mobile phones for communication.

6.6 Volume of Pigeonpea Purchased by Different Traders in a Value Chain

Babati District in 2008 produced 15,043,000 kg of Pigeonpea (see table 1.1 in chapter 1). According to the survey the amount sold by farmers to rural assembler, urban wholesaler and urban exporter in a value chain was 5,635,670 kg. The amount sold by farmers cover 37% of the total amount pigeonpea produced in Babati in 2008. That means 63% of the Pigeonpea produced in Babati in 2008 was sold to other brokers/traders than those sampled for the survey.

The amount bought by different traders differs between participants as it is shown in figure 6.2 below. Rural assemblers bought 57%, urban wholesalers bought 34% and urban exporter bought 9% with large percent be bought by rural assemblers compared to urban wholesalers and urban exporter because they are many, each one covers a small area and trades a small volume (They actually represent a substantial rural employment – through self employment) (See figure 6.1).

Figure 6.2 Amount of Dry Pigeonpea Bought Direct from the Farmers in Babati



Source: Field Survey, (2009)

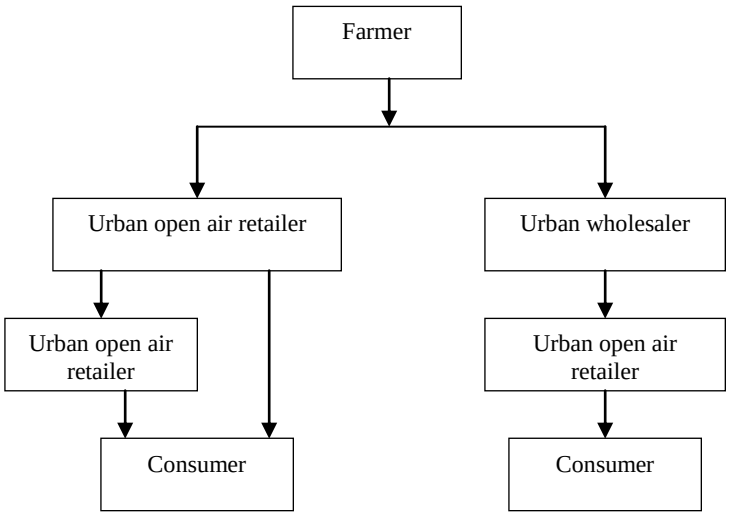
According to the bureau of statistics report, the total amount exported for dried peas in 2008 was 72,290,070 kg. Based on the results from this study, the total amount of dry pigeonpea exported by exporters in a value chain was 13,148,057kg. In the export market, dry pigeonpea is not differentiated from other types of dried peas under the HS code 07131000. In comparing the amount of dry pigeonpea exported in a value chain with the total amount of dried peas exported in 2008, the amount exported in a value chain accounts for 18% of the total amount of dried peas exported.

From the direct marketing system, farmers sell direct to urban exporters 557,747 kg. Also exporter received 10,654,827kg from urban wholesalers (see table 6.8).

Table 6.8 Volume Traded by Different actors in a Value Chain

	Rural Assembler (kg)	**Urban Wholesaler (kg)**	**Urban Exporter (kg)**
Farmers	3,538,478	2,097,252	557,747
Rural Assembler	324,275	1,183,020	1,935,483
Urban Wholesaler	-	-	10,654,827

Figure 6.3 Value Chain for Green Pigeonpea



Source: Field Survey, (2009)

6.7 Green Pigeonpea Value Chain

Green pigeonpea is marketed for only domestic consumption. For istance, there are other substitute products for green pigeonpea, hence the domestic consumption is still low. Wholesalers buy green pigeonpea from the farmers and sell to consumers in open air retail markets in Kilombero, Mbauda and Tengeru market (which are open air retail markets available in Arusha Region North of Tanzania). The urban open air retailers sometimes buy direct from the farmers and sell to consumers or sometimes they buy from the urban wholesaler in the open air market. Once the urban open air retailers buy from the farmers they add value by manual shelling. This is done by the seller while selling at the open market.

Picture 6.1: Green Pigeonpea after Shelling

Source: Field Survey, (2009)

6.7.1 Identified Market Channel for Green Pigeonpea

Urban wholesaler channel and urban open air retailer channel are the channels identified for green pigeonpea value chain. From the green pigeonpea marketing chain, the longest channel is the open air retailer which involves value addition of the final product before consumed.

Green pigeonpea business is very small and participant engaged themselves in the business in order to earn their living. The amount they buy is insignificant because they face capital constraint problem and lack of knowledge on how to store green pigeonpea for reasonable time while it maintain its freshness. Therefore, they are forced to buy in small quantity and earn low profit due to high transaction cost and short selling period. Green pigeonpea business for most traders in Arusha markets is taken as a support business and not the main business as it shown in the picture 6.2 below.

Picture 6.2 Green Pigeonpea as Supporting Business in Kilombero Market Arusha


Source: Field Survey in Kilombero Market in Arusha, (2009)

6. 8 Dry Pigeonpea Marketing Channels, Margin, Costs, Profit and Qualit Requirements

6.8.1 Market Channels in a Dry Pigeonpea Value Chain

Market channels describe how the pigeonpea marketed from different market in the value chain. Products pass through a number of actors along the different marketing channels linking producers and consumer hence produce a marketing chain (so called a value chain) (Shiferaw, et al., (2007). In this study, the marketing channels link the farmers and exporters. Within the marketing channels, transaction cost such as the cost of searching the buyer and seller and weighing charges are incurred when bringing pigeonpea to the end point before export. This tends to increase the total cost and lower the farmer's share on the final price. The channels identified helps in analysis of the market price, cost and profit by different actors in different point in a value chain and finally help in identification of strategies that can be implemented to improve the situation.

The strength of the value chain depends on the degree of trust and relationship that exists among different participants. In situation where sharing of information is poor and players behaves in ways that undermine the activities of the others, the value chain is under develop and largely inefficient and inequitable (Shiferaw, et al., (2007).

By looking at the volume traded between the participants in a pigeonpea value chain, Urban exporter is the critical player in a value chain because they buy 100% of dry pigeonpea from participants in the upstream of the value chain (see table 6.8).

The issue of volume traded between actors in a value chain can bring the issue of control among actors. According to Piyapromdee, Hillberry and MacLaren, in 2009 they suggest that the downstream firms can act as oligopsonists in purchasing produce from farmers, by the exercise of market power. In the situation where participant transact high volume, can have control over the market. From this study, it shows that exporters are critical player buying all dry pigeonpea from the value chain. This shows that, once the farmers produced pigeonpea, since they don't have access to external market, they depend on assemblers, wholesalers and exporters to market their produce since they basically buy all that is not consumed domestically. Therefore this brings the issue of power dependency among actor (i.e. Monopoly/monopsony power). Therefore exporters have control of pigeonpea value chain and sellers don't have that control because they depend on exporters. This is caused by having only export market for pigeonpea, few exporters and farmers don't have direct access.

6.8.1.2 Market Channels for Dry Pigeonpea

From the pigeonpea value chain, the shortest channel is the channel where by farmers sell direct to urban exporter. This channel does not involve middlemen because, farmers have arrangement with exporters on what to produce and get assistance in terms of seeds, training and credit from exporters so as to produce the quality needed at the market. In this channel, there is continuous relationship developed between farmers and urban exporter which creates trust and guarantee of market to farmers which is only done by one company in Babati town which function as an exporter while at the same time function as urban wholesaler. The exporter buy from the farmers and sell to other traders in (Arusha and Dar es Salaam) and outside Tanzania (Europe and India). The second shortest channel is the channel where farmers sell to the urban wholesalers. This channel involves only one link between the farmers and exporters. The channel which involves rural assemblers seems to be the longest channel in pigeonpea value chain whereby, it involves rural assemblers, urban wholesalers before reach to the exporters. According to Eskola in 1997, this shows that in pigeonpea

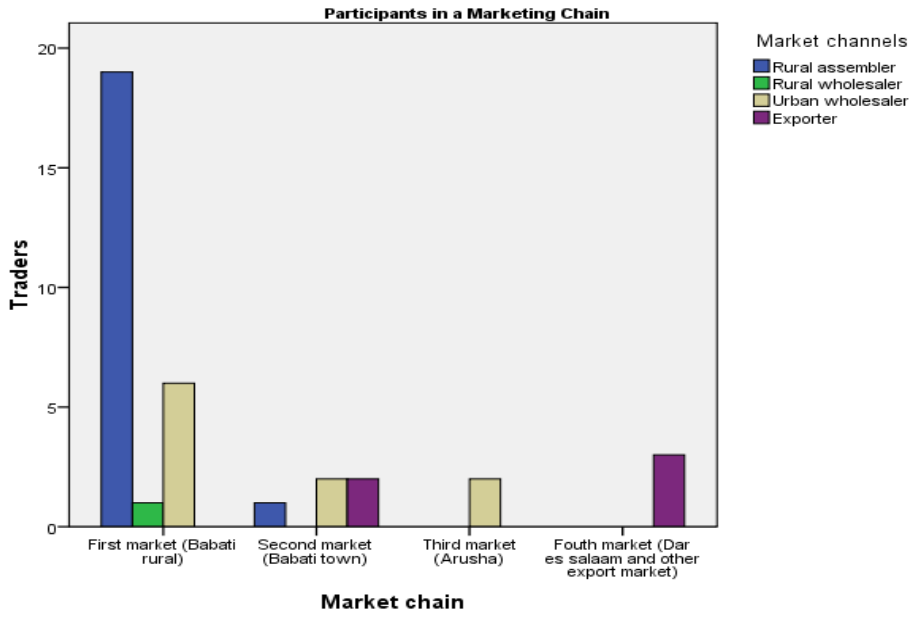
value chain, both direct marketing system and indirect marketing system is applied to meet consumers demand in the market but the common marketing system used is the indirect system. Based on our objective of reducing poverty by finding better market of pigeonpea in international market, there is the need to concentrate on reducing cost and selling at competitive prices.

From this study three marketing channels were identified for dry pigeonpea from the farmer to downstream of the value chain before exported since the study does not go beyond the border.

Based on the survey done in Tanzania along the value chain, there was no any processor of dry pigeonpea found. Therefore pigeonpea is exported as raw to India the main consumer, Kenya and Europe. There is no domestic market for pigeonpea in Babati, people use substitute's crops like beans as food crop. This makes pigeonpea to be produced with target on the export market especially in the Northern Tanzania inclusive Babati district.

From analysis of the marketing channel in a value chain, it shows that, the rural market i.e. Babati villages are concentrated by the rural assemblers followed by the urban wholesalers and lastly by rural wholesalers. Exporters use the agents when buy dry pigeonpea and pay them in advance. This shows that there is relationship between the actors in a value chain especially exporters and rural assembler in first market in Babati villages. Urban wholesaler in Arusha buy dry pigeonpea from the first market in Babati villages and the second market in Babati town and sell to the exporters in Dar es Salaam. Rural wholesaler appears only in the first market and do the same function as urban wholesalers but due to lack of capital to sell in Babati town or downwards the value chain they sell to the same market point after they buy without adding any value in order to benefit from the pigeonpea business by getting profit. Therefore they buy from and rural assembler in the same market, whereby rural assembler carry transaction cost and sells at the same market point. The only cost they incur is the buyer search cost. This increase the transaction cost as no value addition for the pigeonpea sold while at the same time increase the chance to sell pigeonpea.

Figure 6.4 Buying Point in a Value chain of Dry Pigeonpea



From the identified channels rural wholesalers are treated as rural assemblers because they have the same functions in the same location. Therefore, they serve the same channel i.e. rural assembler channel in the value chain of dry pigeonpea in this study.

6.8.2 Marketing Margins, Costs and Profits by Market Actors of Dry Pigeonpea

Profit is important factor to consider when making any decision in a business. It can be determined by the costs incurred in doing business and the selling and buying price. In order to look at the profit in the value chain, we need to find the average buying price, selling price and costs associated with transaction for different participants in a value chain.

6.8.2.1 Marketing Price of Dry Pigeonpea

The buying and selling prices of dry pigeonpea increase from one market to another market in a value chain as one moves from the upstream to downstream due to costs incurred when when undertaking a transaction. The price of pigeonpea is affected by the distance or geographical distribution of farmers or buying points to the market. As one moves from upstream to downstream, experience an increase in price due to cost such as payment to the buying agent, cleaning cost, transportation cost, seller/buyer search cost and loading and offloading cost (See table 6.10).

Looking at the marketing chain, rural assemblers doing their business in first market in Babati village, they don't incur transportation cost to urban market, and they don't use the buying agent which makes their price to be low as compared to the price given by urban wholesalers and exporters. The increased in price for urban wholesaler's and exporter's channels is due to extra cost incurred during transaction such as seller search cost, payment to the buying agent, cost of transportation, loading and offloading, cleaning labor charges, storage cost and other cost associated with transaction. From the market chain starts from rural to urban market; the seller's carries transaction cost as the distance of the buying point increases.

From the price point of view, farmers are getting lower price from the exporters which is 406 TZs per Kilogram, followed by the rural assemblers 488 TZs per kilogram and lastly by urban wholesalers 499TZs per kilogram. According to opportunism behavior in transaction cost theory, Barney, (1990) provides that decision makers may seek to serve their own interests and it is difficult to know ex-ante who is trustworthy and who is not. The price receive by farmers from exporter is by far small compared to other traders in the value chain due to control over the market and low bargaining power of farmers caused by lack of information about market price.

Apart from distance and cost also the price of pigeonpea is affected by opportunistic behavior of different actors in different market points. The price increases from the rural market to urban market (as it is shown in table 6.10). Based on transaction cost theory, the private information the buyer has can affect the price because of lack of information about the price by the seller as we discussed earlier that in the first market not all participants own mobile phone and radio. This therefore reduces the chance of the seller to get fair price due to lack of market information. From the table it shows that, farmers and rural assembler get low price due to lack of market information about market price by being far from the end of the chain, therefore the buyer act opportunistically, for example farmer get 488TZs per kilogram and the buyer sell 634TZs per kilogram with the big difference compared to other members in a chain while incur a total cost of 93 TZs per kilogram (see table 6.9)

Also the power that the buyer has can affect the price in the market. Power can be generated due to the volume demanded or the specific asset invested by one part doing transaction. Looking at the power of the buyer towards the seller based on the amount the buyer demand on the value chain., in pigeonpea market, the price is affected by the exporter since they have power toward pigeonpea marketing by consolidating all pigeonpea from the upstream of the value chain for export, while at the same time farmers invested in production of pigeonpea, therefore due to lack of contractual relationship, a farmer has low power to bargain over the market price. This is also contributed by the small number of exporters in the market. For example exporter pays 406TZs kilogram to the buyer and sell at 603TZs per kilogram which the difference is high compared to the buying price from other members of the value chain.

Table 6.9 Selling price Versus Buying Price

Actors	**Channel 1** Rural assembler/broker		**Channel 2** Urban wholesaler		**Channel 3** Urban exporter	
	Buying price(in kg)	Selling price (in kg)	Buying price (in kg)	Selling price (in kg)	Buying price (in kg)	Selling price (in kg)
Farmer	488	634	499	581	406	603
Rural assembler	474	598	518	631	612	664
Urban wholesaler					540	730

Source: Babati Field Survey (2009)

According to the model presented in chapter three by Tilanus, 1997 two types of marketing chain i.e. direct and indirect marketing chain were presented. From the table above the direct link is where farmers have direct transaction with exporters. In this channel the price is low due to the given reasons above i.e. 406 TZs per kilogram which is lower than the average price the rural assembler paid by exporter.

6.8.3 Pigeonpea Marketing Costs

Based on the conceptual framework from previous chapter, marketing of pigeonpea is associated with both variable and fixed costs. Total variable costs of marketing pigeonpea include marketing costs, and transaction costs and total fixed costs include the costs of identifying, negotiating, and concluding an exchange (Williamson 1985, Nabli and Nugent, 1997). Based on the conceptual framework for the study we used the total cost as marketing costs (which involves processing cost, packaging and labeling cost, payments to agent,

transport cost, loading and offloading charges, cleaning cost, weighing charges, storage cost, tax charges, cost of buying bags) and transaction cost (which involves seller search cost and buyer search cost).

According to the literature reviewed, the total cost in a value chain is affected by the number of factors, such as geographical distribution which affect transportation cost, the nature of the channels with many actors in between and no value addition and activities involved in a value chain.

From the analysis, the shortest channel is the direct channel to exporter, in this channel the cost associated with marketing of pigeonpea is high compared to rural assembler and low compared to urban wholesalers. This is due to geographical distribution of farmers and lack of economies of scale.

The long channel in the pigeonpea value chain is the channel of urban wholesalers. Urban wholesalers buy from the farmers and rural assembler; they incur transaction cost and transport pigeonpea from the first market in Babati rural to the second market in Babati town market and third market in Arusha market. The cost incurred by urban wholesaler selling in the second market in Babati town is small compared to the cost incurred by urban wholesaler selling to third market in Arusha. This increase in cost is due to distance and has influence on price too. In this channel the price is not affected by the distance only, but also other extra cost incurred by urban wholesalers in searching for sellers and buyers and handling cost such as loading and offloading cost when many link involved. These costs adds up to the total cost which affect the final price due to high cost and reduces the total profit on the value chain.

Table 6.10 Distribution of Dry Pigeonpea Total Channel Marketing Cost and Profits

Actors	Channel 1 Rural Assembler/Broker		Channel 2 Urban Wholesaler		Channel 3 Urban Exporter	
	Cost (in kg in TZs)	Profit(in kg in TZs)	Cost (in kg in TZs)	Profit(in kg in TZs)	Cost (in kg in TZs)	Profit(in kg in TZs)
Farmer	93	132	91	76	99	198
Rural assembler	78	123	130	110	81	51
Urban wholesaler					218	188

From table 6.10 above, the total cost incurred by different participants in a value chain differs from one channel to another. The cost incurred by rural assembler when selling to rural assembler is small due to no extra cost incurred in terms of cleaning, the buyer (i.e. rural assembler in downstream) incur transaction cost. It involves double handling of pigeonpea in the same market by selling without value addition. According to Tilanus in (1997), the channel which with cost incurred without value addition which cause increase in total cost of the marketing channel and increase the final price to consumer should not be considered. The cost incurred by a farmer is high compared to a rural assembler in the first channel because they carry cleaning cost and the cost of loss of weight after cleaning. The cost of farmers in the first channel is almost the same with the first channel because urban wholesaler incurs marketing cost i.e. transportation cost to urban markets. The cost incurred by exporters to farmers and rural assembler is low compared to urban wholesalers because; urban wholesalers buy from the same sellers and increase the cost due to double handling cost.

6.8.4 Pigeonpea Profit

The average profit the actors received in each channel depends on the buying price, selling price and the cost involved. In case when the selling price is high and low buying price with low cost of transaction the profit is high. For example rural assembler who buy from the same market, bought at low price o 474 TZs per kilogram and sell at high price of 598 TZs per kilogram and get high profit of 132 TZs per kilogram. This applies to all members in every channel. Therefore in order to get higher profit, there is a need to concentrate at reducing unnecessary cost that may cause to increase the cost in a value chain because the higher profit can be received by having low cost.

6.8.5 Pigeonpea Quality Requirements

Apart from the distance or geographical distribution among farmers, market information, power control, and power issue between actors, activities involved by actors which increase cost in a value chain and seasonality of transaction, also quality can be considered as very important factor in pigeonpea market because it influences price in a market and reduces the margin of a participant when doing transaction in a value chain. In pigeonpea, quality is required by buyer when doing transaction which is the consumer requirement to fulfill in the downstream of the value chain.

6.8.5.1 Quality Characteristics of Traded Pigeonpea

Pigeonpea quality is determined by the buyer through visual observation. The quality of pigeonpea is determined differently by different buyers in different market due to customer's preference. The requirement of quality decreases when moving down to the value chain. The middlemen in the upstream demand high quality pigeonpea and forced the farmers to incur cleaning cost. This therefore shows that the quality of pigeonpea increases when moving down the value chain. 68% of the middlemen required special quality in the first market (rural market), 16% in the second market in Babati town and 8% for Arusha and Dar es Salaam respectively. Color being a most important in quality requirement since, 74% rank color as the most important to consider when buying pigeonpea while 82% of participants who buy in upstream preferred white as the quality required pigeonpea in downstream of the value chain, while the remaining 18% buy the available pigeonpea because Babati is well known as the produce of superior quality suitable for the export market, especially the large and white colored grains. According to rank of different participants, the second quality requirement on physical aspect is seed pattern followed by shape and size.

In batch characteristics, buyers prefer most to check if there is no weevil damage, cleanliness of the seeds and foreign matters. For the dry whole grain requirements such as protein content, sugar content, cooking time are not considered by the buyer when buying dry pigeonpea because they are not required by customers.

In case the seller falls short of the quality requirement, buyer can accept to buy if the quality is not satisfied in one bag but the buyer can cut 1-10 kilograms per bag of 115 kilogram or can buy at less price. The buyer cannot buy dry pigeonpea which is damaged by weevil. By reducing the price of pigeonpea or cut kilograms, reduces the total revenue that the seller can get. In dry pigeonpea market the buyers are more concerned about the quality because their customers require and they get better price once they trade the quality pigeonpea and get more access to the market. 96% of the buyers in the first market are satisfied by the quality provided by the sellers, 4% not satisfied the buyer due to lack of facilities to clean, while 100% of the buyers in the second, third and fourth market are satisfied because is meeting their requirement in terms of color, size, seed pattern, shape, foreign matters, damaged by weevil and cleaned seeds.

According to the survey price is affected by the quality of traded pigeonpea. Only 19% of the respondents said that, price is affected by the quality they buy in domestic market. This is happening to only the actors who are exporting to Europe and India. Price premium for the good quality dry pigeonpea is provided by European market 11%, and Indian market is less than 5%.

6.9 Access to Market Information

In the first market 96% of participants get domestic market information from buyers, while 4% don't get such information and 40% in the second market get domestic market information from Magazine, Radio, Television, Internet and buyers themselves. However, this was discussed earlier, market information brings the problem of opportunism when one partner accesses market information and another partner do not have access when doing transaction together, this causes unfair trade among the trading parties.

6.10 Access to Credit

Only 16% of participants in upstream (rural assemblers) and 25% of urban wholesalers had access to credit in rural microfinance banks and commercial banks and cleared all their debt. The amount borrowed were used to support pigeonpea business and other crop business they are doing. The interest rate varies from 10-18% for upstream participants and the 18-25% for

downstream participant. It was difficult to know how much the urban exporters borrowed since they are dealing with many crops and they don't borrow for other purposes.

Other participants in a value chain didn't borrow money because some of them finance their pigeonpea business by the use of advance from their buyers while others fear of defaulting in the in the payment borrowed money because of risk and high interest rate; lack of collateral; lack of knowledge about loans; not members of SACCOs that can access loan and high bureaucracy. Others too have enough capital for the business and they use money obtained from other business, for downstream activities. 75% of participants got money from the buyers and also they fear defaulting in payment of the money back due to the risk associated with pigeonpea business.

By evaluating the business of different participants, business in the downstream of the value chain increases because of increase in demand which increase profit/return, increase in supply as pigeonpea taken by farmers as cash crop, increase number of buying points due to the available market and prevailing high demand, relationship between buyers and sellers, good returns due to customer satisfaction in terms of quality, high purchasing power, get accurate information in the market, and don't speculate.

The respondents mention that 12% of the pigeonpea business in upstream are decreasing and 8% of the pigeonpea business in upstream and 33% of the business in downstream remain constant because of capital constraint, price fluctuation which reduces amount purchased in every season, short selling period, high competition among sellers and buyers, lack of own transportation and late collection, lack of market information results in selling at low price, lack of enough pigeonpea due to animals destruction especially in Mamire village in Mamire ward because the village is bordered by National park and unable to capture economies of scale due to financial constraints.

6.11 Strength and Weakness of Pigeonpea Business

6.11.1 Strength of Pigeonpea Business

The strength of pigeonpea marketing business can be divided into two parts in a value chain, i.e. upstream part and downstream part.

In the upstream of the value chain, the areas ofthe strength identified are: the production of the required pigeonpea from the farm to meet the market requirements; selecting better quality when buying; taking advantage of price increment by storage; diversifying business to avoid lose, experience and good relationship with traders. Others areas of strength are the use of contractual agreement and advance from the buyers; increased buying points and the reliable transport during the season; use of high yield seeds; make use of middlemen and use of bicycle to consolidate produce from individual farmers and the use of credit to grow the business.llect from individual farmers and make the use of the borrowed money to inject on business.

The strength of downstream pigeonpea marketing business are: good relationship with the sellers; good business policy; networking and being aware of the world market; good management and high purchasing power.

6.11.2 Weakness of Pigeonpea Business

The pigeonpea business is faced with the main problem of capital constraint. This affect the whole business since it reduces the purchasing power and affect the economies of scale that could be obtained from buying large quantity; it cause lack of access of important services that can facilitate and stimulate the business downwards in the value chain in order to fetch high price such as transport. Processing of pigeonpea into dhal also reduces the ability of participants to store and sell pigeonpea in a period when there is high price.

CHAPTER 7
SUMMARY, POLICY RECOMMENDATIONS AND AREA FOR FURTHER RESEARCH

7.0 Introduction

In this chapter, summary of the results, policy recommendations and areas for further research will be discussed. Key issues of the study through the use of value chain approach as a developmental tool to understand how pigeonpea marketing can contribute to national socioeconomic development will be discussed. Value chain analysis makes it easier to identify the issues and policies that can be implemented for pigeonpea farmers to increase their share of these gains. The following is a summary of issues from the study.

7.1 Summary of the Results

Based on the challenges the farmers are getting, with the use of transaction cost theory this study mainly seeks to analyze the value chain of pigeonpea in Tanzania for better policy making, to improve their market access so as to improve production and reduce poverty. To attain the main objective, mapping of the value chain and analysis of the existing performance in terms of price, cost and profit from the source to the downstream of the value chain was done.

The results shows that, type of marketing system used is not direct marketing system although one company is doing direct marketing by having arrangement with farmers and buying from them. The common market system involves many links with no value addition within the channels which increase the total cost by double handling. Farmers sell pigeonpea individually which increase the transaction cost such as seller/buyer search cost. In all the two systems, there is lack of market information by farmers in upstream and control of big buyers in downstream making farmers to have low bargaining power due to all the amount of pigeonpea from the upstream of the value chain bought by the urban exporters. Since the middlemen have direct contact with exporters, they knew the quality required, they act opportunistically towards the farmers and enjoy the profit by buying at low price with no value addition. Also there is lack of capital which constraints participants in a value chain which is caused by lack of knowledge and collateral to get loans. Another issue is of gender

participation in this business, for dry pigeonpea men are involved while green pigeonpea business involves women. Women are not involved in dry pigeonpea business because the business needs larger amount of capital that they cannot afford.

7.2 Policy Recommendations

Based on ongoing debate about globalization, that globalization is bad or good for the poor, it depends on how producers and countries exert themselves in the global economy. The key policy issue is not whether to participate in global markets or not, but how to do so in a way that provides for sustainable income growth. Therefore the government and donor agencies need to facilitate implementation of the policies in the sector to help reduce poverty to smallholder farmers who are mostly affected by the changes in global marketing of agricultural product. From the analysis the following discussed policies issues were suggested under:

7.2.1 Develop Functioning Marketing Systems

Good functioning marketing system is needed through the formation of strong traders and farmers' associations and other representative bodies to enhance capacity building and to bargain for fairer terms of trade (Shao, 2002 and Eskola, 2005). In pigeonpea marketing, there is no value addition for the product when moving from one point to another. Only the cleaning is done at the first point of the value chain, therefore the direct marketing channel should be adopted to reduce double cost such as loading and offloading, seller or buyer search cost, storage cost and payment to the buying agent.

7.2.2 Develop a Contractual Arrangement Between Farmers and Exporters.

The pigeonpea value chain should now change the direction of its perception to the vertical coordination kind of relationship among the actors in the value chain. Since the direct market seems to be the best option in terms of cost reduction in a value chain, farmers should organize themselves and have direct transaction with the exporters. Therefore, there is a need to enter into contract with exporters.

The contractual arrangement with exporters can provide farmers with a number of advantages. Exporters can provide farmers with inputs, training by employing extension agents to supervise

farmers to ensure that they adhere to the market requirements, technical assistance and other services, and credit, as well as having a guaranteed market for pigeonpea they produce. This can reduce cost not only in marketing but also in production of pigeonpea and increase competition in international market because they will get a competitive price.

According to transaction cost theory, when farmers produce pigeonpea specifically for certain company they will be locked up and their bargaining power is reduced but this option is still important since it reduces the total cost of transaction in the value chain and increase their living standard compared to those who produce individually without any arrangement. According to a report by Food and Agriculture Organization of the United Nation in (2007), traditional buyers who do not get involved in production support programs and usually do not enter into long term commercial relationships with farmers generally buy and sell on a day-to-day basis. They typically lack the capacity to define, monitor, or enforce a quality or safety standard. Through the contractual arrangement, exporters can expand their market to the European market since this market demands high quality pigeonpea and through this arrangement it is easy to meet their requirement. This could benefit the participants in a value chain in meeting the more stringent quality standards demanded by European buyers. According to Jones, Freeman and Monaco, (2002), Technoserve was organizing small farmers in northern Tanzania into local groups which are provided with appropriate training in village-level grain cleaning and handling. These groups were linked directly to exporters, who in turn were linked with identified European buyers. To facilitate and expand the exporters' cash purchases from these groups, the government and non government organization should help farmers to build capacity on contract issue which can help smallholders to bargain fair terms of trade and avoid opportunism.

7.2.3 Formation of Collective Action by Farmers

Therefore the government through the use of extensionists should facilitate develop of good marketing strategies such as to have collective bargaining through co-operative societies or commercial groups of farmers on upstream in order to have the direct link with the exporters.

Collective action occurs when individuals voluntarily cooperate as a group and coordinate their behavior in solving a common problem. In broad terms, collective action may be defined as action taken by a group (either directly or on its behalf through an organization) in pursuit of members' perceived shared interest (Marshall 1998), which fits well in the traditional African setting. In the absence of well functioning markets, African farmers have traditionally relied on kinship and other forms of reciprocal relationships in production, marketing and other social activities (Fafchamps and Minten 1999; Gabre-Madhin, 2001).

Farmer marketing groups as an outcome of collective action are unlikely to emerge on their own (Johnson, Ravnborg, Westermann and Probst, 2002), because farmers do not understand the concept of economies of scale when participating in a collective action. The need for collective action depends on the resource type, degree of spatial integration and the time required in achieving the desired outcomes. Conducive environment and political leaderships should be controlled, White and Runge (1995) have shown that groups will emerge and survive where a "critical mass" of individuals has practical knowledge of the potential gains from collective action, but that in the short term emergence can be constrained by landscape factors that affect the potential net gain. In this arrangement, an individual's choice to participate in collective action will depend on his/her expectation of other members' behavior. (Shiferaw, Obare and Muricho, 2006).

The formation of collective action by farmers will have direct effect on production among farmers themselves since the market will be assured and increase farmers' capacity in terms of bargaining and reduce the control of exporters. According to Lutheran World Relief,[4] improving collaboration helps farmers achieve economies of scale by pooling resources to reduce unit costs of inputs and outputs (for example they share cost of searching the buyer, cleaning cost and storage cost) increasing access to credit, technical assistance, transport, and price information; and managing viable enterprises and commercial relationships. Through collective action farmers can use the opportunity of village warehouse available, whereby they can save cost such as rent cost, weighing cost and cost of treatment to avoid pests.

[4] http://www.lwr.org/ourwork/docs/LWR_Ag_Value_Chain.pdf

7.2.4 Timing of the Selling Period

Tanzanian exporters export pigeonpea to India, Pakistan, Middle East (UAE and Saudi Arabia), and Singapore. India is the biggest producer of pigeonpea but does not cater for the need as demand exceeds supply, especially before the harvest period in January and February, therefore they buy from different producing countries to fulfill the extra demand that they cannot meet. Tanzania is producing pigeonpea and depends on export markets. In order to capture the Indian market farmers need to concentrate and study the Indian market which is the major market of Tanzanian pigeonpea. In order to sell at higher price in the international market, farmers through their collective action with the help of government agencies such as Selian Agricultural Institute of Research (SARI) can plan and select the short term pigeonpea seeds. This can help to target high market price in India before January and February when they are harvesting. By considering substitutes product like chickpeas and beans, this strategy go together with the cost reduction strategy through the use of direct link in a value chain. This helps in reducing the selling price of pigeonpea which can be competitive in the international market compared to the substitute products.

7.2.5 Value Addition

Pigeonpea in Tanzania is exported raw as there is no processing going on at the time of this study though one company plan to start. The company has built a plant in Dodoma. This is the best strategy in pigeonpea value addition which will increase the demand for pigeonpea and improve farmer's standard of living and employment in the industry. In order to increase the number of processors, the government needs to provide good environment for domestic and foreign investors in pigeonpea processing by reducing cumbersome procedures and encourage more investment in food processing in general. The processing of pigeonpea could bring significant changes in the sector.

When planning for processing industry, the issue of location of the industry is very important to consider to help reduce the cost of transportation. Much consideration should be paid to cost reduction. By locating processing plants near the farms one can reduce cost and increase the opportunity of farmers to engage in the process and improve their incomes and thereby reduce the level of poverty. It can also help to reduce rural-urban migration.

7.2.6 Marketing Information

In Tanzania, the current institutional framework is unable to support the formation of strong traders and producers' associations and other representative bodies to enhance capacity building and to bargain for fairer terms of trade (Shao, 2002 and Eskola, 2005). In pigeonpea value chain, assemblers buys pigeonpea from the farmers by negotiating price while the farmers have no or limited market information. Information systems are hardly present because farmers have no direct contact with the exporters to know the market price on the downstream of the value chain. Due to the absence of a good marketing system farmers sell the product without knowing the actual price in the market. Therefore, the government can facilitate access to domestic market information for sellers especially in the rural market through special events such as seminars and workshops and the use of extension officers. Also the media such as radio which is more used in rural area should be encouraged to provide market price information of specific crops to farmers.

7.2.7 Supporting Powerful Participants in a Value Chain

The government should provide an enabling/onducive environment to encourage exporters within the value chain to provide support to farmers by providing incentives such as tax exemption or tax deduction and financial incentives for expenditure related to training farmers. Some specific interventions by governments and donors may include co-financing of grant schemes for the private sector to engage in activities such as training and capacity building for small holder farmers. This can help to bring exporters closer to smallholder farmers and enhance contractual arrangements in the market.

7.2.8 Access to Credit

The government institutions such as Ministry of Agriculture must organize seminars and workshops to educate traders on matters concerning credit in general. The government with the help of donors should provide different schemes that can help to finance the groups of farmers who market their produce through collective marketing. Since the main problem that smallholder farmer get in accessing credit is lack of collateral, common arrangements can be made to facilitate farmers in production and marketing of pigeonpea by large buyers, through the provision of inputs on credit, which they deduct from the payment after farmers

have delivered their crops. By facilitating access to credit by farmers can help to alleviate one of the critical challenges of value chain development.

7.2.9 Facilitate the Formation of SACCOs

The government and donors can facilitate the formation of SACCOs among the farmers which seems to work out in most of the villages. In this association the farmers can sell together their produce through copeative societies and have their own bank that help them to access credit when they are in need.

7.2.10 Empowering Women on Marketing of Pigeonpea

Based on the survey done for the study, women are not engaging in marketing of pigeonpea, therefore the government and donor agents should encourage women to participate in the marketing of pigeonpea by providing awareness on marketing aspect and encourage them to establishing market groups.

7. 3 Areas for Further Research

Based on transaction cost theory, in order to reduce poverty and improve production of smallholder farmers by reducing the price of pigeonpea and become competitive in the market, it is suggested that, the best option to use is to have the value chain with minimum cost and only links which add value to the end product should be taken into consideration. Therefore the proposed channel is the direct market system whereby, farmers have direct contact to the exporters. It is not enough only to reduce cost within the value chain without reduce the power of buyers in downstream of the value chain. Improvement of small holder farmers on bargaining power on the value chain can be the area that needs to further study. This can be done by looking at the power dependency among actors in a value chain and how to reduce the control of the powerful actors in the chain to the benefit of other partners within the value chain.

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APPENDIX 1
Identified Farmers Groups and Selected Sample

Table 8.1 Farmers Groups in Babati District

Group code	Group name	Village	Ward	Trader's name	P-pea	Maize	Sunfl.	Beans
T22	Mshikamano group	Qash	Qash	Alhaji Saif	x	x		
T07	Msesewe group	Gidabaghar	Gidas	Ali Dibu	x	x		
T07	Msesewe group	Gidabaghar	Gidas	Appy Hau	x	x		
T09	Kimama farmer group	Gijedaboshka	Gidas	Bakari Nahe	x	x		
T06	Jipemoyo group	Majengo street	Singe	Bashari J Ngomuo - Babati town market area	x	x		
T34	Juhudi group	Arri	Arri	Batholomew	x	x		
T12	Gallapo farmers SACCOS	Gallapo	Gallapo	Blas (=Blas Tatoi?)	x	x		
T14	Jiendeleze group	Gedamar	Gallapo	Blas Tatoi	x	x		
T06	Jipemoyo group	Majengo street	Singe	Blasi - Gallapo (=Blas Tatoi?)	x	x		
T12	Gallapo farmers SACCOS	Gallapo	Gallapo	Bwashe (=Bwashe Kisarika?)	x	x		
T14	Jiendeleze group	Gedamar	Gallapo	Bwashe Kisarika	x	x		
T40	Duru White group	Duru	Duru	Christopher	x	x		
T28	Mkombozi farmers group	Endakiso	Mamire	Dee	x	x	x	
T05	Gamata farmers group	Managha	Singe	Dodoma Transport	x			
T10	Songambele group	Gijedaboshka	Gidas	Dodoma Transport	x			
T26	Maendeleo farmers group	Chemchem	Mutuka	Dodoma Transport	x			
T35	Azimio group - Bermi	Bermi	Dareda	Dodoma Transport	x			
T39	Nguvukazi farmers group	Riroda	Riroda	Dodoma Transport	x			
T41	Kimbadu farmers group	Duru	Duru	Dodoma Transport	x			
T44	Uzama farmers group	Endaberg	Riroda	Dodoma Transport	x			
T17	Kambaemi farmers group - Alizeti	Qash	Qash	Dodoma Transport - Arusha	x			
T19	Haboga farmers group	Qash	Qash	Dodoma Transport - Arusha	x			
T25	Mkombozi farmers group	Malangi	Maisaka	Dodoma Transport - Arusha	x			
T29	Mwangaza farmers group	Kwaraa	Mamire	Dodoma Transport - Babati - Arusha	x			
T30	Chapakazi farmers group	Mamire	Mamire	Dodoma Transport - Babati - Arusha	x			
T46	Tumaini farmers group	Endanachan	Ayasanda	Dodoma Transport - Babati - Arusha	x			

T20	Meqbami SACCOS	Qash	Qash	Erina Maro (=Eva Maro?)	x	x	
T14	Jiendeleze group	Gedamar	Gallapo	Eva Maro (=Erina Maro?)	x	x	
T27	Tegemeo group	Chemchem	Mutuka	Hussein Buki/Boki	x		x
T06	Jipemoyo group	Majengo street	Singe	Josephati Shayo - Gallapo	x	x	
T14	Jiendeleze group	Gedamar	Gallapo	Josephati Shayo - Gallapo	x	x	
T20	Meqbami SACCOS	Qash	Qash	Josephati Shayo - Gallapo	x	x	
T22	Mshikamano group	Qash	Qash	Josephati Shayo - Gallapo	x	x	
T07	Msesewe group	Gidabaghar	Gidas	Julius Joseph	x	x	
T06	Jipemoyo group	Majengo street	Singe	Juma Tembea - Gallapo	x	x	
T45	Maendeleo farmers group	Endanachan	Ayasanda	Kimaryo	x	x	
T07	Msesewe group	Gidabaghar	Gidas	Kirantula Tembea	x	x	
T20	Meqbami SACCOS	Qash	Qash	Kisarika Bwashe	x	x	
T22	Mshikamano group	Qash	Qash	Kisarika Bwashe	x	x	
T20	Meqbami SACCOS	Qash	Qash	Kiwaka	x	x	
T22	Mshikamano group	Qash	Qash	Kiwaka	x	x	
T04	Gendi Rural COOP Society	Singe	Singe	Mohamed Bajwa (=Mohamed Enterprise?)	x		
T05	Gamata farmers group	Managha	Singe	Mohamed Bajwa (=Mohamed Enterprise?)	x		
T30	Chapakazi farmers group	Mamire	Mamire	Mohamed Enterprise - Arusha/ Dar es Salaam	x		
T35	Azimio group - Bermi	Bermi	Dareda	Mohamed Enterprise - Arusha/ Dar es Salaam	x		
T46	Tumaini farmers group	Endanachan	Ayasanda	Mohamed Mbaju - Babati (=Mohamed Enterprise?)	x		
T28	Mkombozi farmers group	Endakiso	Mamire	Mrombo (=Focus Mromboo?)	x	x	x
T06	Jipemoyo group	Majengo street	Singe	Musa J Ngomuo - Babati town market area	x	x	
T12	Gallapo farmers SACCOS	Gallapo	Gallapo	Nicholas	x	x	
T27	Tegemeo group	Chemchem	Mutuka	Nyan Yambi	x		x
T06	Jipemoyo group	Majengo street	Singe	Peter Bashari Malya - Babati	x	x	

				town market area			
T12	Gallapo farmers SACCOS	Gallapo	Gallapo	Said Juma (=Said Ngozi?)	x	x	
T06	Jipemoyo group	Majengo street	Singe	Saidi Ngozi - Gallapo	x	x	
T09	Kimama farmer group	Gijedaboshka	Gidas	Salim Gadie	x	x	
T24	Kingami FFS	Kiongozi	Maisaka	Sumni - Babati town	x	x	
T05	Gamata farmers group	Managha	Singe	Arusha main market		x	
T08	Endelewu farmers group	Gidas	Gidas	Arusha main market		x	
T10	Songambele group	Gijedaboshka	Gidas	Arusha main market		x	
T15	Subira farmers group	Gedamar	Gallapo	Arusha main market		x	
T19	Haboga farmers group	Qash	Qash	Arusha main market		x	
T25	Mkombozi farmers group	Malangi	Maisaka	Arusha main market		x	
T26	Maendeleo farmers group	Chemchem	Mutuka	Arusha main market		x	
T35	Azimio group - Bermi	Bermi	Dareda	Arusha main market		x	
T39	Nguvukazi farmers group	Riroda	Riroda	Arusha main market		x	
T41	Kimbadu farmers group	Duru	Duru	Arusha main market		x	
T44	Uzama farmers group	Endaberg	Riroda	Arusha main market		x	
T46	Tumaini farmers group	Endanachan	Ayasanda	Arusha main market		x	
T04	Gendi Rural COOP Society	Singe	Singe	Bashari (=Bashari J Ngomuo?)		x	
T08	Endelewu farmers group	Gidas	Gidas	Dodoma Transport		x	
T31	Muungano Mamire SACCOS	Mamire	Mamire	Focus Mromboo (=Mrombo?)		x	x
T31	Muungano Mamire SACCOS	Mamire	Mamire	Hussein Boki/Buki		x	x
T31	Muungano Mamire SACCOS	Mamire	Mamire	Juma Papa		x	x
T26	Maendeleo farmers group	Chemchem	Mutuka	Kilimhero market - Arusha		x	
T08	Endelewu farmers group	Gidas	Gidas	Kilomberu market - Arusha		x	
T10	Songambele group	Gijedaboshka	Gidas	Kilomberu market - Arusha		x	
T15	Subira farmers group	Gedamar	Gallapo	Kilomberu market - Arusha		x	
T19	Haboga farmers group	Qash	Qash	Kilomberu market - Arusha		x	
T05	Gamata farmers group	Managha	Singe	Kilombo market - Arusha		x	
T31	Muungano Mamire	Mamire	Mamire	Masumbuko		x	x

	SACCOS			Chakala			
T46	Tumaini farmers group	Endanachan	Ayasanda	Mbanda Market - Arusha	x		
T04	Gendi Rural COOP Society	Singe	Singe	Musa Ngomwo (=Musa J Ngomuo?)	x		
T44	Uzama farmers group	Endaberg	Riroda	Mwanza city	x		
T19	Haboga farmers group	Qash	Qash	Mwanza main market	x		
T19	Haboga farmers group	Qash	Qash	Namanga market - Kenya border post	x		
T05	Gamata farmers group	Managha	Singe	Namanga market - Kenya border post	x		
T35	Azimio group - Bermi	Bermi	Dareda	Namanga market - Kenya border post	x		
T46	Tumaini farmers group	Endanachan	Ayasanda	Ngaramtoni Market - Arusha	x		
T33	Tumaini group	Daghailoy	Sigino	None			
T38	Wamngwana group	Nakwa	Bagara	None			
T43	Kiua group	Endaberg	Riroda	None			
T46	Tumaini farmers group	Endanachan	Ayasanda	Odonyo Sambu Market - Arusha	x		
T41	Kimbadu farmers group	Duru	Duru	SGR - Arusha	x		
T25	Mkombozi farmers group	Malangi	Maisaka	SGR - Babati	x		
T39	Nguvukazi farmers group	Riroda	Riroda	Shinyanga/Singida (sometimes)	x		
T17	Kambaemi farmers group - Alizeti	Qash	Qash	Sunflower processing plants in Arusha		x	
T29	Mwangaza farmers group	Kwaraa	Mamire	Sunflower processing plants in Babati		x	
T30	Chapakazi farmers group	Mamire	Mamire	Sunflower processing plants in Babati		x	
T17	Kambaemi farmers group - Alizeti	Qash	Qash	Sunflower processing plants in Babati		x	
T29	Mwangaza farmers group	Kwaraa	Mamire	Sunflower processing plants in Gallapo		x	
T17	Kambaemi farmers group - Alizeti	Qash	Qash	Sunflower processing plants in Gallapo		x	
T05	Gamata farmers group	Managha	Singe	Tarakea market	x		
T18	Kumekucha SACCOS group	Tsamasi	Qash	World Food Programme	x		X

Table 8.2 Selected Villages and Respondent's Name

#	Village	Ward	Broker's name	Based at	Comment	Day	Date
1	Arri	Arri	Edward Baha	Ari		MO	20/7
2	Arri	Arri	Juma Gufa	Ari		MO	20/7
3	Endanachan	Ayasanda	Boo Qalmi	Endanachan		FR	17/7
4	Endanachan	Ayasanda	Emanuel Zebedayo	Endanachan		SU	19/7
5	Bermi	Dareda	Turu J. Ara	Bermi		MO	20/7
6	**Duru**	**Duru**	**Musa Ngomuo**	**Babati**	**Trader, not broker**	**MO**	**20/7**
7	Gedamar	Gallapo	Qwanzawe Sige	Gedamar		TH	16/7
8	Gijedaboshka	Gidas	Ayubu Green	Bereko		FR	17/7
9	Gijedaboshka	Gidas	Kasim Reri	Gijedaboshka		FR	17/7
10	Mamire	Mamire	Herman Emmanuel	Mamire	Only sunflower, not p-peas		
11	Chemchem	Mutuka	Lucian Ona	Chemchem		TU	21/7
12	Qash	Qash	Abubakari Ramadhani	Qash		TU	21/7
13	Qash	Qash	Bashini Hassan	Qash		TU	21/7
14	Qash	Qash	Maulidi Issa	Gallapo		TU	21/7
15	Endaberg	Riroda	Gwai Dambay	Nakwa		MO	20/7
16	Endaberg	Riroda	Joseph Gidel	Endaberg	Not a broker or trader		
17	Endaberg	Riroda	Samwel Nada	Nakwa		MO	20/7
18	Riroda	Riroda	Yusufu Shabani	Riroda		MO	20/7
19	Majengo street	Singe	Idi Array	Singe		FR	17/7
20	Majengo street	Singe	Peter Malya	Babati	Trader, not broker - not available		
21	Mamire	Mamire	Adam Shirima	Mamire	Replacement for Herman Emmanuel	TU	21/7
22	Kiongozi	Maisaka	Amosi Marko	Kiongozi	Replacement for Joseph Gidel/ Peter Malya	WE	22/7
23	Kiongozi	Maisaka	Herman Francis	Kiongozi	Replacement for Joseph Gidel/ Peter Malya	WE	22/7

Table 8.3 Name of Traders in Babati District

#	Village	Ward	Trader's name	Based at
1	Duru	Duru	Dodoma Transport	Babati
2	Gallapo	Gallapo	Blas	Gallapo
3	Gedamar	Gallapo	Kisarika	Gallapo
4	Gedamar	Gallapo	Josephat Shayo	Gallapo
5	Gidabaghar	Gidas	Appy hau	Gidas
6	Kiongozi	Maisaka	Sumni	Kiongozi
7	Endakiso	Mamire	Mromboo	Babati
8	Qash	Qash	Maro	Qash
9	Majengo Street	Singe	Juma Tembea	Gallapo
10	Managha	Singe	Mohamed Bajwa	Babati

APPENDIX 2

Questionnaire Form

Pigeonpea Value Chain Study in Tanzania.
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)
Selian Agricultural Research Institute (SARI)

(To be filled by enumerators with selected traders along the supply chain for each marketing channel)

Enumerator details:

Name of enumerator_____

Date of interview _____

Place (market/town) of interview _____

Level of understanding of the respondent (High=3, Medium=2, Low=1) _____

I. Identifiers of the pigeonpea business enterprise

1. Name of the business enterprise _____
_____
2. Location (market/town) _____
3. Address of the business enterprise (Physical address and P.O. Box)
_____
_____

Telephone (landline): _____(mobile): _____

Fax: _____

Email: _____

(Note: Indicate None if any of the above details are lacking)

4. Fill the table below as it pertains to your business starting with pigeonpea (2004/05 year)

Crop	**Amount purchased (kg)**

5. Number of permanent employees _____; Total spent on salaries per month _____
6. What is the percentage of pigeonpea as a proportion of total business turnover?_____

II. Characteristics of the respondent

Name of respondent	Sex	Education (highest level attained in years)	Role in enterprise	Years of experience in pigeonpea trading	Type of trader
1.					
2.					
	Codes: 1. Male 2. Female		**Codes:** 1. Owner manger 2. Hired manger 3. Other (specify)…		**Codes:** 1. Rural assembler/broker 2. Rural shopkeeper/wholesaler 3. Urban wholesaler 4. Urban processor 5. Urban exporter 6. Urban supermarket retailer 7. Urban open air retailer 8. Other (specify)……..

III. Business assets owned by the trader

Assets	For assets owned			Asset rented		Asset used for other enterprises besides pigeonpea (1=Yes; 2=No)
	No.	Asset value	Monthly maintenance cost	No.	Rent per month	
Office						
Warehouse/store						
Telephone (land line)						
Telephone (mobile)						
TV						
Internet access						
Truck						
Bicycle						
Weighing scale						
Dehulling machine						
Milling machine						
Other machines, specify…… …						

IV. Scale of operation

1. Licensed business enterprise (**Codes:** 1. Yes 2. No)_____
2. Number of established buying points within the district _____
3. Number of established buying points outside the district _____
4. Number of established selling points within the district _____
5. Number of established selling points outside the district _____

V. Buying activities

1. Amount of **dry grain pigeonpea** bought last cropping year (2008/09) and own transaction costs

Seller **Codes**	Total amount bought **kg**	Month bought	Price paid **TZS/kg**	Quality of the grain **Codes**	Transaction frequency with seller **Code**	Transport costs **TZS/115 kg bag**	Mode of transport **Codes**	Seller search costs **TZS /115 kg bag**	Payment to buying agents **TZS/115 kg bag**	Cleaning labour **TZS/115 kg bag**	Weight loss after cleaning kg/115 **kg bag**	Storage costs **TZS/115 kg bag**	Loading/ offloading charges **TZS/115 kg bags**	Other costs **TZS/115 kg bag**

Seller codes
1. Farmer
2. Rural assembler/broker
3. Rural retail shopkeeper
4. Rural Wholesaler
5. Urban wholesaler
6. Urban processor/exporter
7. Urban supermarket
8. Urban open air retailer
9. Urban retail shopkeeper
10. Other, specify……

Quality of the grain codes
1. Above average
2. Medium
3. Below average

Mode of transport codes
1. Train
2. Truck
3. Bicycle
4. Ox-cart
5. Back/head lots
6. Other, specify……..

NB: ***Storage costs*** include chemicals used in storage, labor, weight loss in storage due to moisture and or insect damage, refrigeration etc

Note: Customs clearance and bank payments are for exporters

VI. Selling activities 1. Amount of dry grain pigeonpea sold last cropping year (2008/09) and own transaction costs

Buyer **Code**	Destination market or town	Month sold	Price received **TZS/kg**	Total amount sold **kg**	Quality of the grain **Codes**	Processing costs **TZS/115 kg bag**	Packaging and labeling **TZS/115 kg bag**	Buyer search costs **TZS/115 kg bag**	Payment to agents **TZS/115 kg bag**	Transport costs **TZS/115 kg bag**	Mode of transport **Codes**	Loading and offloading charges	Customs clearing **TZS/115 kg bag**	Bqank payments TZS/ transaction	Other costs **TZS/115 kg bag**

Buyer codes
1. Consumer (rural)
2. Consumer (urban)
3. Rural assembler (broker)
4. Rural retail shopkeeper
5. Rural wholesaler
6. Urban wholesaler
7. Urban processor/exporter
8. Urban supermarket
9. Urban open air retailer
10. Urban retail shopkeeper
11. Other, specify……

Quality of the grain codes
1. Above average
2. Medium
3. Below average

Mode of transport codes
1. Train
2. Truck
3. Bicycle
4. Ox-cart
5. Back/head lots
6. Other, specify……..

Note: Customs clearance and bank payments are for exporters.

VII. Agri-business support services

1. Do you have access to the following services from different service providers? (Fill the table below using **Codes:** 1 = Yes; 2 = No)

Crops	Farmers' costs of production	Good storage practices	Domestic market information	Export market information	Grading and labeling	Export quality standards	Phytosanitary and other certification
1. Dry grain pigeonpea							
2. If **YES** in **1** above, then from whom							
3. Satisfied with the information provided? **Yes/NO**							

Note: Market information includes information on potential buyers and prices

2. Did you access any credit last year for your pigeonpea business? **Yes/NO** _____

3. If **YES** in Q2 above**,** then fill the table below

Source of credit **codes**	Purpose used	Amount borrowed	Interest rate (% per year)	Paid back (yes/no)

Source of credit codes

1. Commercial banks
2. Rural microfinance
3. Sacco
4. Merry go round
5. Other, specify……..

4. If **NO** in Q 2 above, then why did you not borrow_____

_____

_____

_____

VIII. Changes in the pigeonpea business transactions

1. Has your pigeonpea business increased (grown) or decreased over time? **(Tick appropriately)**

Increased _____ Decreased_____Constant_____

2. If it is increasing/decreasing/constant, then give the factors that make it to increase/decrease/constant_____

_____

_____

_____

3. Fill the table concerning your average annual purchases in different seasons as determined by the weather conditions

Season	**Dry pigeonpea (tons)**	
	Domestic market	Export market
Good weather season		
Average weather season		
Bad weather season		

4. State the strengths and weakness of your dry grain pigeonpea marketing/trade business

Strengths:

_____

_____

_____

Weaknesses:

_____

_____

_____

Quality criteria of the pigeonpea:

IX. PURCHASING OF THE PIGEONPEA:

1. Do you have special quality requirements about the pigeonpea you buy? (**Codes**: 1 Yes 2 No)
2. If **YES;** what are they? (Fill the tables below using codes and ranks)

Physical aspect of the seed (Dry whole grain)	Color **(Code)**	Seed pattern **(Code)**	Shape **(Code)**	Size **(Code)**	Others (Specify)	**Color Codes:** 1 White 2 Cream 3 Orange 4 Light brown 5 Brown 6 Light grey 7 Others (specify)…	**Seed pattern Codes:** 1 Plain 2 With patterns 3 Others (specify)…..	**Shape Codes:** 1 Oval 2 Round 3 Square 4 Elongate 5 Others (specify)	**Size Codes:** 1 Large 2 Medium 3 Small If possible specify in **mm**
1 Yes 2 No If yes put the code If yes rank: 1 being the most important									

Batch's characteristics (Dry whole grain)	Homogeneity	**%** of foreign matter	**%** of weevil damage	**%** of chemical residues	Cleaned seeds	Polished seeds	Seeds treated for storage	Others (Specify)
1 Yes 2 No								
If yes put the code or the precise %								
If yes rank: 1 being the most important								

Homogeinity codes: 1. Uniform, 2. Alittle mixed, 3. Very mixed

	Nutritional qualities			**Utilization qualities**				**Packaging standards**		
Dry whole grain	**%** of protein content	**%** of sugar content	Others (Specify)	**%** of grain moisture	Dehulling efficiency	Cooking time	Others (Specify)	Weight **(kg)**	**Kind** of packaging	Others (Specify)
1 Yes 2 No If yes put the precise %										
If yes rank: 1 being the most important										

Purchase

3. Why do you require those quality standards when buying?
   1 Your customers require it
   2 You get better prices when you sell if the quality is better
   3 You have access to more markets
   4 Others

4. If no to question 1 (you don't have any quality requirements), why?
   1 The quality you would require is not available
   2 Your customers don't require any quality standards
   3 Others……

5. Are you satisfied with the quality?
   Of the physical aspect of the seed: 1 Yes 2 No Why……..
   Of the characteristics of the batch: 1 Yes 2 No Why……..
   Of the nutritional qualities: 1 Yes 2 No Why……..
   Of the utilization qualities: 1 Yes 2 No Why……..
   Of the packaging: 1 Yes 2 No Why……..

6. How do you assess the global quality of the pigeonpea you buy?
   1 Low 2 Medium 3 High

7. Do you select your suppliers with regards the quality they are able to provide?
   1 Yes 2 No

8. If YES, which suppliers do you think provides you with good quality pigeonpea?

9. What is the trend of quality provided by your suppliers?
   1 Increasing 2 Constant 3 Decreasing

10. Are you ready to pay more for a better quality? 1 Yes 2 No

11. If yes to question 10, please specify how quality influences the price you pay:

Quality deficiency	**% price reduction**

STORAGE AND PROCESSING OF THE PIGEONPEA:

1. Do you try to improve the quality standards after buying the pigeonpea?
   1 Yes 2 No

2. If yes to question 1, then how? By:
   - Cleaning it (remove the impurities)? 1 Yes 2 No
   - Grading/sorting it? 1 Yes 2 No
   - Dehulling it (remove the seed envelop) 1 Yes 2 No
   - Drying it? 1 Yes 2 No
   - Polishing it? 1Yes 2 No
   - Packaging it? 1 Yes 2 No
   - Others (specify)…….

3. Do you store the pigeon pea? 1 Yes 2 No

4. If yes to question 3:
   - 4.1 How long do you store it? (Time)……..
   - 4.2 Do you manage maintaining the quality during the storage?
     1 Yes 2 No
   - 4.3 If yes to question 4.2, by:
     - Putting chemical? 1 Yes 2 No
     - Packaging it? 1 Yes 2 No
   - 4.4 If no, what are the main causes of deterioration in quality?

X. SELLING OF THE PIGEONPEA:

1. Do your customers have special quality requirements about the pigeonpea you sell? 1 Yes 2 No

1. If yes to question 1, what are they? (Fill the tables below using codes and ranks)

Physical aspect of the seed (Dry whole grain)	Color **(Code)**	Seed pattern **(Code)**	Shape **(Code)**	Size **(Code)**	Others (Specify)	**Color Codes:** 1 White 2 Cream 3 Orange 4 Light brown 5 Brown 6 Light grey 7 Others (specify)…	**Seed pattern Codes:** 1 Plain 2 With patterns 3 Others (specify)…..	**Shape Codes:** 1 Oval 2 Round 3 Square 4 Elongate 5 Others (specify)	**Size Codes:** 1 Large 2 Medium 3 Small If possible specify in **mm**
1 Yes 2 No If yes put the code If yes rank: 1 being the most important									

Batch's characteristics (Dry whole grain)	Homogeneity	**%** of foreign matter	**%** of weevil damage	**%** of chemical residues	Cleaned seeds	Polished seeds	Seeds treated for storage	Others (Specify)
1 Yes 2 No								
If yes put the code or the precise %								
If yes rank: 1 being the most important								

Homogeinity codes: 1. Uniform, 2. Alittle mixed, 3. Very mixed

	Nutritional qualities			**Utilization qualities**				**Packaging standards**		
Dry whole grain	**%** of protein content	**%** of sugar content	Others (Specify)	**%** of grain moisture	Dehulling efficiency	Cooking time	Others (Specify)	Weight **(kg)**	**Kind** of packaging	Others (Specify)
1 Yes 2 No If yes put the precise %										
If yes rank: 1 being the most important										

SALE

3. Do you think your customers are satisfied with the quality you provide them?
   1 Yes 2 No

4. Do you select your customers with regards to the quality they require?
   1 Yes 2 No

5. What is the trend of quality required by your customers?
   1 Increasing 2 Constant 3 Decreasing

6. Are you ready to provide a better quality if the prices increase with the quality?
   1 Yes 2 No

6. If yes to question 6, how quality influences the price you receive:

Grade	%price premium

XI. CONTACT INFORMATIO OF DOWNSTREAM TRADERS

Name	Address	Telephone