

# Margin Profit Of Value Chain For Pigeonpea In Tanzania

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**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. The positivity and negativity of globalization have been experienced at a number of different levels i.e Individual, household, firm, town, region, sector and nation. However, little is known on the challenges the farmers are getting, with the use of transaction cost theory. This study therefore analyzed margin profit of the value chain for 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 mapping the value and also 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, common marketing system used is not direct marketing system although there is one group of the company doing direct marketing by having arrangement with farmers and buy 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 profit by buying at low price with no value addition. Also the 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 and green pigeonpea is the women business. Women involvement of women in dry pigeonpea business is restricted by lack of capital.

**Keywords:** GDP, pigeonpea, Margin Profit Of Value Chain.

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## 1. INTRODUCTION

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 and 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).

However, 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). At the sectoral level liberalisation of domestic agricultural markets and the effects of globalisation 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). 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 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.

## **2. STATEMENT OF THE PROBLEM**

Many countries in sub-Saharan Africa have liberalized markets to improve efficiency and enhance market linkages for smallholder farmers. Statistics show that, over 75% of the rural population are characterised by smallholder farmers who are disorganized (Asenso-Okyere, Davis, and Aredo, 2008). However, market access has persisted to be the constraint. 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. Also, due to inadequate access to storage facilities, smallholder farmers are poorly served by small traders, making local market thin and less competitive. Shiferaw et. al (2006) identified 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 as value chain problems. Moreover, 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 (Nadvi, 2008). However, little is known on how the Tanzanian government has done to assist smallholder farmers to become important players in local and export markets. This study therefore assessed the value chain for pigeonpeas, a lucrative export crop, in Tanzania.

## **3. RESEARCH METHODOLOGY**

### **3.1 Study location:**

This study was conducted in Babati District in Arusha region which is the main pigeonpea producing district in Tanzania. This 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 pigeonpeas as a cash crop (Technoserve - TA & ICRISAT/SARI, 1990's).

### **3.2 Research design:**

Snowballing and random sampling procedures and cross sectional timeframe were employed which are common for social network studies. Thus, a random seed sample from the farmers groups dealing with pigeonpea was selected in targeted villages in Babati District. These groups were asked to identify the four most important pigeonpea brokers and traders who were operating in their villages. Also, the information from farmers' self-help groups in a random sample of villages was drawn from a list of all pigeonpea-producing villages in Babati District. In this procedure, 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. Then "tertiary respondents", were downstream traders identified by secondary respondents. At the tertiary level, all the downstream traders identified by the secondary respondents were included and their number decreased geometrically to downstream. Therefore, an appropriate design for this study entailed a careful consideration of the features of the phenomenon under investigation. Such features dictated both the type of empirical data as well as the method applied in data analysis (Aaker, et al., 2002; Gupta 2003; Hannås, 2007).

### **3.3 Data collection techniques:**

Survey across the sample elements used a 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. 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. The questionnaire was modified after discussion with research team and the final questionnaire was developed for the main survey.

In questionnaire administration; personal questionnaire administration, mail administration, telephone and electronic surveys (Mwakibinga, 2008) were used. Selection of any of this method had an effect on the data quality. Data quality 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).

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 had 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 seemed to be more relevant to this study done in Babati, Arusha and Dar es Salaam as indicated in Table 1. Looking at mobility factors, in order to get these traders the best option was to chase them in their business.

**Table 1: Summary of the outcomes for data collection process**

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

### 3.4 Data analysis:

This study used descriptive analysis to analyse data for 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.

### 3.5 Data Collection Techniques:

In the use of survey across the sample elements we used a 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.

## 4. RESULTS AND DISCUSSION

### 4.1 Volume of Pigeonpea Purchased by Different Traders in a Value Chain:

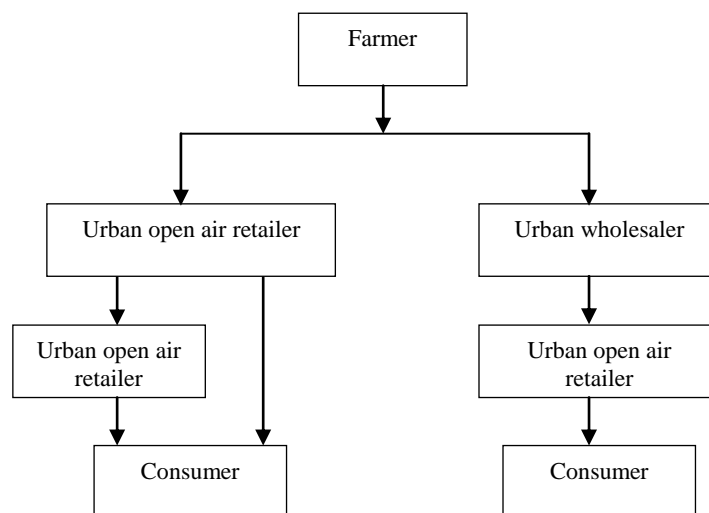
According to the survey results, the amount sold by farmers to rural assembler, urban wholesaler and urban exporter in a value chain was 5,635,670 kg. The amount sold by farmers cover 37% of the total amount pigeonpea produced in Babati in 2008. The amount bought by different traders differ between participants as it is shown in Figure 1. 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 operate in a large geographical areas than traders (see figure 6.1).

According to 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 was 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 accounted for 18% of the total amount of dried peas exported. From the direct marketing system, farmers sold direct to urban exporters 5,557,747 kg. Also exporter received 10,654,827kg (Table 2)

**Table 2: 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 1: Value Chain for Green Pigeonpea**

#### 4.2 Green Pigeonpea Value Chain:

Green pigeonpea was marketed for only domestic consumption. For instance, there are other substitute products for green pigeonpea, hence the domestic consumption was still low. Wholesalers bought green pigeonpea from the farmers and sold to consumers in open air retail markets in Kilombero, Mbauda and Tengeru market (which were open air retail markets available in Arusha Region North of Tanzania). The urban open air retailers sometimes bought direct from the farmers and sold to consumers or sometimes they bought from the urban wholesaler in the open air market. Once the urban open air retailers bought from the farmers they added value by removing covers by hand. This was done by the seller while selling at the open market.



Source: Field Survey (2009)

**Picture 6. 1: Green Pigeonpea after Remove the Cover**

#### 4.2.1 Identified Market Channel for Green Pigeonpea:

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

Green pigeonpea business was small and participants engaged themselves in the business in order to earn their living. The amount they bought was insignificant because they faced capital constraint problem and lack of knowledge on how to store green pigeonpea for reasonable time while maintain its freshness. Therefore, they were 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 was taken as a support business and not the main business.

#### Green Pigeonpea as Supporting Business in Kilombero Market Arusha



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

#### 4.3 Dry Pigeonpea Marketing Channels, Margin, Costs, Profit and Quality Requirements:

##### 4.3.1 Market Channels in a Dry Pigeonpea Value Chain:

Market channels described how the pigeonpea marketed from different market in the value chain. Products passed through a number of actors along different marketing channels linking producers and consumers hence produced a marketing chain (so called a value chain) (Shiferaw, et al., 2007). In this study, the marketing channels linked the farmers and exporters. Within the marketing channels, transaction cost such as the cost of searching the buyer and seller and weighing charges were incurred when bringing pigeonpea to the end point before export. This increased the total cost and lowered the farmer's share on the final price. The channels identified helped in analysis of the market price, cost and profit by different actors in different points in a value chain and finally helped in identification of strategies that could be implemented to improve the situation.

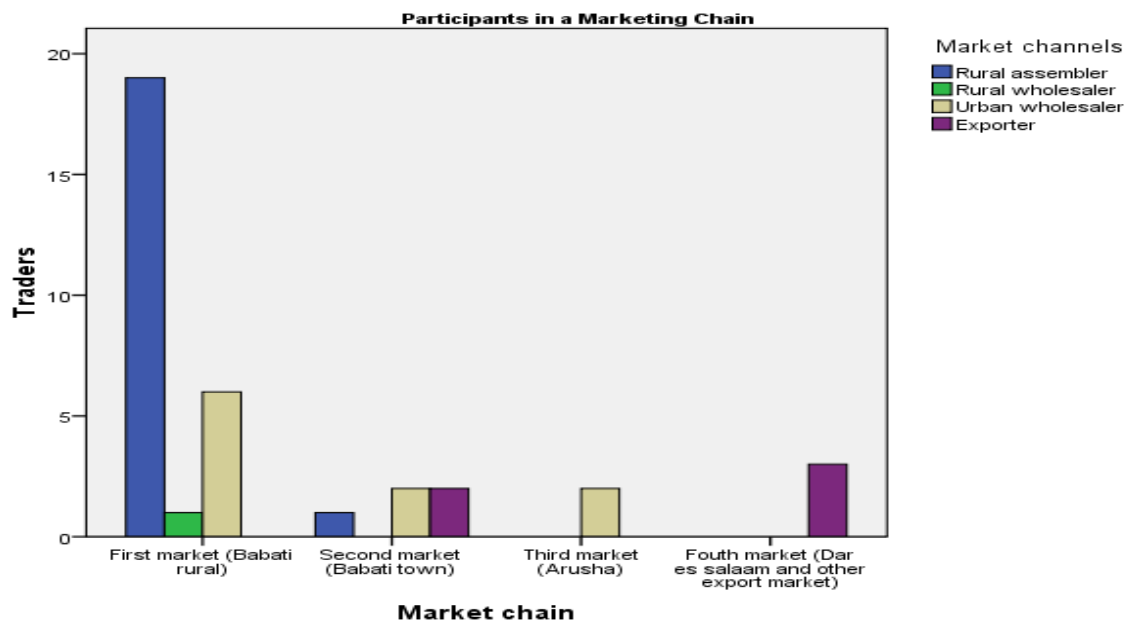
The strength of the value chain depends on the degree of trust and relationship that existed among different participants. In situation where sharing of information was poor and players behaved in ways that undermine the activities of the others, the value chain was under developed and largely inefficient and inequitable (Shiferaw, et al., 2007). By looking at the volume traded between the participants in a pigeonpea value chain, Urban exporter was the critical player in a value chain because they bought 100% of dry pigeonpea from participants in the upstream of the value chain (Table 1).

The issue of volume traded between actors in a value chain could bring the issue of control among actors. According to Piyapromdee, Hillberry and MacLaren (2009) suggested that the downstream firms could act as oligopsonists in purchasing produce from farmers, by exercising market power. In the situation where participant transacted high volume, could have control over the market. From this study, it showed that exporters were critical players buying all dry pigeonpea from the value chain. This showed that, once the farmers produced pigeonpea, since they didn't have access to external market, they depended on assemblers, wholesalers and exporters to market their produce since they basically bought all that was not consumed domestically. Therefore this brought the issue of power dependency among actors (i.e. Monopoly/monopsony power). Therefore exporters had control of pigeonpea value chain and sellers didn't had that control because they depended on exporters. This was caused by having only export market for pigeonpea, few exporters and farmers not had direct access.

**4.3.2 Market Channels for Dry Pigeonpea:**

From the pigeonpea value chain, the shortest channel was the channel where by farmers sold direct to urban exporter. This channel was not involving middlemen because, farmers had an arrangement with exporter on what to produce and got assistance in terms of seeds, training and credit from exporter so as to produce the quality needed at the market. In this channel, there was continuous relationship developed between farmers and exporter which created trust and guarantee of market to farmers which was only done by one company in Babati town which function as an exporter while at the same time function as urban wholesaler in Babati town. Bought from the farmers and sold to other traders in (Arusha and Dar es Salaam) and outside Tanzania (Europe and India). The second shortest channel was the channel where farmers sold to the urban wholesalers. This channel involved only one link between the farmers and exporters. The channel which involved rural assemblers seemed to be the longest channel in pigeonpea value chain where by, it involved rural assemblers, urban wholesalers before reach to the exporters. According to Eskola (1997), this shows that in pigeonpea value chain, both direct marketing system and indirect marketing system was applied to meet consumers demand in the market but the common marketing system used by was indirect system. Based on the objective of reducing poverty by finding better market of pigeonpea in the international market, there is a need to concentrate on reducing the cost and sell at a competitive price.

From this study, three marketing channels were identified for dry pigeonpea from the farmer to downstream of the value chain before being exported since the study did 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 was exported as raw to India as the main consumer, Kenya and Europe. There was no domestic market for pigeonpea, in Babati people used substitute’s crops like beans as food crop. This made pigeonpea to be produced with target on the export market especially in the Northern Tanzania including Babati district. Therefore, the identified value chain channels and volume of pigeonpea traded to the point of export were as follows:



**Figure 2: Buying points in a Value chain of Dry Pigeonpea**

From analysis of the marketing channel in a value chain, it showed that, the rural market i.e. Babati villages were concentrated by the rural assemblers followed by the urban wholesalers and lastly by rural wholesalers. Exporters use the agents when bought dry pigeonpea and paid them in advance. This shows that there was a relationship between the actors in a value chain especially exporters and rural assembler in first market in Babati villages. Urban wholesaler in Arusha bought dry pigeonpea from the first market in Babati villages and the second market in Babati town and sold to the exporters in Dar es Salaam. Rural wholesaler appeared 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 sold to the same market point after they bought without adding any value in order to benefit from the pigeonpea business by getting profit.

Therefore, they bought from and rural assembler in the same market, where by rural assembler carried transaction cost and sold at the same market point. The only cost they incurred was the buyer search cost. This increased the transaction cost as there as no value added for the pigeonpea sold while at the same time increased the chance to sell pigeonpea.

From the identified channels rural wholesalers were treated as rural assemblers because they had the same functions in the same location. Therefore, they served the same channel i.e. rural assemblers channel in a value chain of dry pigeonpea in this study.

#### **4.4 Marketing Margins, Costs and Profits by Market Actors of Dry Pigeonpeas:**

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, there is a need to find the average buying price, selling price and costs associated with transaction for different participants in a value chain.

##### **4.4.1 Marketing Price of Dry Pigeonpea:**

The buying and selling prices of dry pigeonpea increased from one market to another market in a value chain as moving from upstream to downstream due to costs incurred when carry transaction. The price of pigeonpea was affected by the distance or geographical distribution of farmers or buying points to the market. As one moved from upstream to downstream, experienced an increase in price due to cost such as payments 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 did 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 price for urban wholesaler's and exporter's channels was due to extra cost incurred during transaction such as seller search cost, payment to the buying agent, cost of transportation, loading and offloading, cleaning labour 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 were getting lower price from the exporters which was 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 received by farmers from exporter was 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 was affected by opportunistic behaviour of different actors in different marketing points. The price increased 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 had could affect the price because of lack of information about the price by the seller (since not all participants own mobile phone and radio). This therefore, reduced the chance of the seller to get fair price due to lack of market information. From the table it showed that, farmers and rural assembler got low price due to lack of market information about market price by being far from the end of the chain, therefore the buyer acted opportunistically, for example farmer got 488TZs per kilogram and the buyer sold 634TZs per kilogram with the big difference compared to other members in a chain while incurred a total cost of 93 TZs per kilogram (see Table 3).

Also, the power that the buyer could affect the price in the market and the power could 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 was affected by the exporter since they have had power toward pigeonpea marketing by collecting 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, farmers had low power to bargain over the market price. This was also contributed by the small number of exporters in the market. For example exporter paid 406TZs kilogram to the buyer and sold it at 603TZs per kilogram of which the difference was high compared to the buying price from other members of the value chain (Table 3).

**Table 3: 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 by (Tilanus, 1997) of which two types of marketing chain i.e. direct and indirect marketing chain are involved. In Table 3 above, the direct link was where farmers had direct transaction with exporters. In this channel the price was low due to the given reasons that 406 TZs per kilogram which was lower than the average price the rural assembler was paid by the exporter.

#### 4.4.2 Pigeonpea Marketing Costs:

Marketing of pigeonpea was associated with both variable and fixed costs. Total variable costs of marketing pigeonpea include marketing costs, transaction costs and total fixed costs included the costs of identifying, negotiating, and concluding an exchange (Williamson 1985, Nabli and Nugent, 1997). Based on the conceptual framework for the study the total cost was used as marketing costs (which involved processing cost, packaging and labelling 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 involved seller search cost and buyer search cost).

According to the literature reviewed, the total cost in a value chain was affected by the number of factors, such as geographical distribution which affected transportation cost, the nature of the channels with many actors in between and no value addition and activities involved in a value chain. Therefore, from analysis, the shortest channel was the direct channel to exporter, in this channel the cost associated with marketing of pigeonpea was high compared to rural assembler and low compared to urban wholesalers. This was due to geographical distribution of farmers and lack of economies of scale.

The long channel in the pigeonpea value chain was the channel of urban wholesalers whereby they bought from the farmers and rural assembler; they carried 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 was small compared to the cost incurred by urban wholesaler selling to third market in Arusha. The increase in cost was due to distance and this has influence on price. In this channel, the price was 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 added up to the total cost which affected the final price due to high cost and reduced the total profit on the value chain.

**Table 4: Distribution of Dry Pigeonpeas 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 4 above, the total cost incurred by different participants in a value chain differed from one channel to another. The cost incurred by rural assembler when selling to rural assembler was small due to no any extra cost incurred in terms of cleaning, the buyer carried transaction cost. It involved double handling of pigeonpea in the same market by selling without value addition. According to Tilanus (1997), the channel with which cost incurred without value addition and which increase in total cost of the marketing channel and increase the final price to consumer should not be considered. The cost incurred by farmers was high compared to rural assembler in the first channel because they carried cleaning cost and the cost of loss of weight after cleaning. The cost of farmers in the first channel was almost the same with the first channel because urban wholesaler carried transaction cost i.e. transportation cost to urban markets. The cost incurred by exporters to farmers and rural assembler was low compared to urban wholesalers because, urban wholesalers bought from the same sellers and increased the cost due to double handling cost.

#### **4.4.3 Pigeonpea Profit:**

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

#### **4.4.4 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 increased cost in a value chain and seasonality of transaction, also quality could be considered as important factor in pigeonpea market because it influenced price in a market and reduced the margin of a participant when doing transaction in a value chain. In pigeonpea, quality was required by buyer when doing transaction which was the consumer requirement to fulfill in the downstream of the value chain.

##### **4.4.4.1 Quality Characteristics of Traded Pigeonpeas:**

The quality of pigeonpea was determined differently by different buyers in different markets due to customer's preference. Pigeonpea quality was determined by the buyer through visual observation. 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 showed that the quality of pigeonpea increased 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. Colour being the most important in quality requirement since, 74% rank colour as the most important to consider when buying pigeonpea while 82% of participants who bought in upstream preferred white as the quality required pigeonpea in down stream of the value chain, while the remaining 18% bought the available pigeonpea because Babati was well known as the produce of superior quality suitable for the export market, especially the large and white colored grains. According to the rank of different participants, the second quality requirement on physical aspect was seed pattern followed by shape and size.

In batch characteristics, buyers preferred most to check if there was no weevil damage, cleanliness of the seeds and foreign matters. For the dry whole grain requirements such as protein content, sugar content, cooking time were not considered by the buyer when buying dry pigeonpea because they were not required by customers. In case the seller did not reach the quality requirement, buyer could accept to buy if the quality was not satisfied in one bag but the buyer reduce 1-10 kilograms per bag of 115 kilogram as a compensation or could buy at less price. The buyer could not buy dry pigeonpea which was damaged by weevil or by reducing the price of pigeonpeas or cut kilograms, reduces the total revenue that the seller can get. In dry pigeonpea market the buyers were more concerned about the quality because their customers required that they could get better price once they trade the quality pigeonpea and get more access to the market. 96% of the buyers in the first market were 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 were satisfied because was meeting their requirement in terms of colour, size, seed pattern, shape, foreign matters, damaged by weevil and cleaned seeds. According to the survey findings, the price was affected by the quality of traded pigeonpeas. Only 19% of the respondents reported that, price was affected by the quality they bought in domestic market. This happened to only the actors who were exported to Europe and India. Price premium for the good quality dry pigeonpea was provided by European market 11%, and Indian market was less than 5%.

#### **4.4.5 Access to Market Information:**

In the first market 96% of participants got domestic market information from buyers, while 4% don't get such information and 40% in the second market got 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 part is access market information and another part do not access when doing transaction together, this causing unfair trade among the trading parties.

#### **4.4.6 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 the debt. The amount was 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 dont 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 not return back the borrowed money because of risk and high interest rate, no collateral, lack knowledge about loans, not members of SACCOs that can access loan and high bureaucracy. Others they have enough capital for the business and they use money obtained from other business, For downstream, 75% of participants got money from the buyers and also they fear not to return 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.

12% of the pigeonpeas business in upstream are decreasing while 8% in upstream and 33% 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.

#### **4.4.7 Strength and Weakness of Pigeonpea Business:**

##### **4.4.7.1 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 upstream, the strength identified were producing the required pigeonpea from the farm to meet the market requirements, selecting better quality when buying, store and manage the quality from the warehouse and wait to sell when the price increased, diversifying business to avoid lose, experience and good relationship with traders, use of contractual agreement and received money from the buyers, increased buying point and the reliable transport during the season, make arrangement with farmers by producing better seeds and buy from them, make use of middlemen and use of bicycle to collect from individual farmers and make the use of the borrowed money to inject on business.

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

##### **4.4.7.2 Weakness of Pigeonpea Business:**

The pigeonpea business was faced with the main problem of capital constraint. This affected the whole business since it reduced the purchasing power and affect the economies of scale that could be obtained from buying large quantity, it caused lack of access on important services that could facilitate and stimulate the business downwards on the value chain in order to fetch high price like transport, process into dhal, also it reduced the ability of participants to store and sell pigeonpea in a period when there was high price when delivered their harvest late when the price goes down.

## REFERENCES

- [1] Aaker, D. A., Kumar, V., Day, G. S., (2002). Marketing Research, 7th Edition, John Wiley & Sons, Inc.
- [2] Asenso-Okyere, K., Davis, K. and Aredo, D. (2008). Advancing agriculture in developing countries through knowledge and innovation. International food Policy Research Institute.
- [3] Bowling, A. (2005) Mode of questionnaire administration can have serious effects on data quality, *Journal of Public Health*, 27(3): 281-91.
- [4] Eicher, C.K. (1999). 'Institutions and the African farmer: third distinguished economist lecture. Mexico d.f.: international maize and wheat improvement center.
- [5] Gupta, S (2003). Research Methodology and Statistical Techniques, Deep & Deep Publications Pvt Ltd, New Delhi, India
- [6] Hannås, G (2007). Vertical Electronic Coordination and Specific IT Investments in Business-to-Business Relationships, Unpublished PhD Dissertation, Molde University College
- [7] IFAD (2001). Rural poverty report, the challenge of ending rural poverty. Oxford: Oxford University Press.
- [8] Jones, R., Freeman, H. A and Monaco, G.L.(2002). Improving the access of small farmers in Eastern and Southern Africa to global pigeonpea markets.
- [9] Kaplinsky, R. (2000). Globalisation and unequalisation: What can be learned from value chain analysis?, *Journal of Development Studies*, Vol. 37, No. 2., pp 117-146
- [10] Mwakibinga, F. (2008). Public sector procurement in Tanzania: An analysis of Rule Compliance Antecedents, PhD dissertation, Molde University College, Molde, Norway.
- [11] Nadvi (2008). Food value chain analysis. A review of selected studies for Pakistan and Guidelines for further research.
- [12] Nelson, A. and Temu, A. (2002). Institutional adjustment and transaction costs: product and inputs markets in the Tanzanian coffee system. University of Illinois, Urbana-Champaign, USA, Sokoine Agricultural University, Morogoro, Tanzania
- [13] Newman, W. L. (2003). Social Research Methods: Quantitative and Qualitative Approaches, 5th Edition, Pearson Education, Inc.
- [14] Shiferaw, B. Obare, G. and Muricho, G. (2006). Rural institutions and producer organizations in imperfect markets: Experiences from producer marketing groups in semi-arid Eastern Kenya. Working Paper Series No. 23. ICRISAT.
- [15] Stanton, J.V.; Burkink, T. J. (2008). Improving small farmer participation in export marketing channels: perception of US fresh produce importers, supply chain management: *An International Journal*; Volume: 13 Issue: 3.
- [16] Technoserve - TA and ICRISAT/SARI report (1990's). Pigeonpea sub sector study in Northern Tanzania.
- [17] Temu, A. E. and A. A. Temu, (2006). High value agricultural products for smallholder markets in sub Saharan Africa: trends, opportunities and research priorities. Report prepared for International workshop on "How can the poor benefit from the growing markets for high value agricultural products?" held on 3-5 October, Cali, Colombia.
- [18] Tollens, Eric (2006). Market Information Systems in sub-Sahara Africa: Challenges and Opportunities. Poster paper prepared for the International Association of Agricultural Economists Conference, Gold Coast, Australia August 12-18
- [19] Tschirley, D., (2007). Farmer to market linkages in Sub-Saharan Africa and Asia, Michigan State University.
- [20] Warner, J. M. and Campbell, D. A. (2000). "Supply Response in and Agrarian Economy with Non-Symmetric Gender Relations", *World Development* 28(7): 1327-1340
- [21] Weber, M.T., Donovan, C., Staatz, M. J. and Dembélé, N.N., (2006). Guidelines for Building Sustainable Market Information Systems in Africa with strong public-private partnerships. Policy synthesis no. 78. Michigan State University Department of Agricultural Economics.