

Analysis of Chili Pepper Value Chain: A case study of Kpando Torkor Irrigation Scheme in  
the Volta Region of Ghana



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fulfillment for the degree in Agricultural Production Chain Management specializing in  
Horticulture chains

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## List of Abbreviations

FAO	Food and Agricultural Organization
FGD	Focused Group Discussion
GAP	Good Agricultural Practices
GAVEX	Ghana Association of Vegetables Exporters
GEPA	Ghana Export Promotion Authority
GIDA	Ghana irrigation development authority
GIZ	German Society for International Cooperation
GLSS	Ghana Living Standards Survey
GoG	Government of Ghana
IFDC	International Centre for Soil Fertility and Agricultural Development
IIRR	International Institute of Rural Reconstruction
KIT	Royal Tropical Institute
KTIS	KpandoTorkor Irrigation Scheme
MIDA	Millennium Development Authority
MLGRD	Ministry of Local government and Rural development
MOFA	Ministry of Food and Agriculture
PM	Project Manager
PO	Pump Operator
PPRS	Plant Protection and Regulatory Services
SWOT	Strengths, Weaknesses, Opportunities, and Threats
UN	United Nations
VC	Variable Cost

## Abstract

The value chain concept in recent times is being used by businesses and organisations to develop and implement their businesses or projects. These projects employ the value chain analysis approach to generate strategies to support production and marketing capacities that are needed to improve the integration of smallholder farmers into the targeted market and chains.

The objective of the study was to analyse chilli pepper value chain of smallholder farmers producing under Irrigation at KpandoTorkor in the Kpando municipality in the Volta region of Ghana. Specifically with regards to market access and associated problems in aspects of production which can lead to better maximisation of profits and sustainable value chain.

The research was carried out in Torkor in the Kpando municipality using desk research and case study. Secondary data were gathered using desk study. The respondents were interviewed using a checklist as interview guidelines to gather the relevant primary information. Value chain analysis, marketing mix, business canvass model and SWOT tools were used to analyse the results of the data collected.

The outcome of the study indicates that there are two chilli pepper value chains; the export market based chain and the local market based chain. The export market based chain showed a functioning market institution and relationships but the local market based chain is however weak in market institutions. Both chains are not fully developed. The chains are short and lean and smallholder farmers as an actor are performing only the function of producing.

Furthermore, there are opportunities to upgrade for improve market access and integration into the chain. The high demand for chilli pepper domestically is an opportunity for maximising profits leading to sustainability of the chain. However the smallholder farmers are facing challenges of small landholdings, high costs of production, lack of capital for investment, absence of storage facilities and poor infrastructural development.

As recommendations, Upgrading strategies should be focus on product, process and functional upgrading. Smallholder farmers collectively have the capacity to upgrade in the area of production and processing of their chilli pepper (vertical integration). They can do that by re-organising and improving upon co-operation among themselves. Intensification in production, Increasing landholdings and diversification into other varieties of chilli pepper are the other options that can be considered.

The high capital investment from Ghana Irrigation Development Authority (GIDA) in irrigation facility provision requires that smallholder farms should be involved in high value horticultural crops (chillies pepper) to encourage sustainability. Ghana Irrigation Development Authority (GIDA) can also support by assisting in developing more land suitable for irrigation, since less than 20% of the available land is currently under cultivation.

The post-harvest and marketing unit of GIDA should be more involved in the post-harvest and marketing activities in order to provide practical solutions to farmers marketing problems.

GIDA can also encourage private investors to get involved in financing the development of the irrigation infrastructures through a public private partnership (PPP) which is being encouraged by the government of Ghana in most sectors of the economy currently.

## 1 INTRODUCTION

### 1.1 Background information

Chili pepper is an important vegetable crop widely produced in Ghana for local consumption but has been increasingly exported to European market in recent years according to Millennial Development Authority (MIDA) document on investment opportunities in Ghana (MIDA, 2009). Chili pepper is consumed in fresh, dried or processed forms. This has been supported by the work of Nkansah, Ofosu-Budu and Ayarna (2011). The pungent types Chili pepper of which Bird Eye pepper belongs to are consumed in small quantities, considered a condiment or spice for seasoning and stimulating appetite as well as used in local medicine especially for herbal practitioners who prepare ointments for rheumatism and joint pains as Grubben and Denton (2004) stated in their research.

The crop is used in nearly all Ghanaian dishes. The annual demand for Chili pepper is estimated at Ghc 27,000(Ghana's currency) and accounts for about 9.6% of total food expenditure in Ghana as records of Ghana living standards survey indicates (GLSS IV, 2000), while consumption is expected to rise with increasing population. This vegetable crop also finds ready market not only in cities but also in the rural areas.

Chili pepper is one of the most popular vegetables grown by smallholder farmers because they are relatively easy to grow, as well as tolerant to the climatic conditions in Ghana. Currently, Ghana is the fifth largest exporter of chili peppers to the European Union, where the demand for chili pepper has been growing annually by 17 percent on average since the year 2000 (MIDA, 2009 ).

Ghana irrigation development authority (GIDA) is an organization entrusted with the mandate to assist smallholder farmers under their schemes by developing irrigable lands, providing irrigation facilities, produce and market their crops. Specifically GIDA supports smallholder farmers in production and trading capacities that are needed to improve the integration of such poor population segment into the agriculture sector. The mandate of GIDA to assist and provide such services within the agriculture value chain is part of government of Ghana's (GoG) food security measures for the country. The scheme has a farmers co-operative group which together with GIDA; jointly manages the operations and maintenance of the irrigation facilities. Smallholder farmers on the scheme produce a number of vegetables including okra, tinda, chili pepper as well as maize. Chili pepper is considered the most important income earning crop for the farmers on the scheme.

According to MIDA (2009); there is conducive environment for production of the crop. This includes favorable climatic condition, abundance and availability of land with ample water resources. Farmers can cultivate and produce Chili pepper under irrigation all year round. The availability of experienced and well-organized chili pepper farmers, as well as low labor costs for farm operations in the country, serve as great incentive for production of the crop.

Interestingly, farmers face the challenge of maximizing the potential benefits of production of the crop. There is also perception among farmers that buyers especially exporters makes a lot of profits off the farmers who are the primary producers of the product. Unfortunately GIDA's technical assistance has not gone beyond the production level to ascertain the claims. Exporters also claim they hardly make any profit from sales of Chili pepper unlike other vegetables.

This is against the availability of marketing potential domestically and internationally.

Investigations show that there has been a lot of research into the Chili peppers potential trade and market in Ghana and export by Ghana Export Promotion Authority (GEPA) and Millennium Development Authority. Within GIDA and the farmers' co-operative producing on the scheme and Ghana's Ministry of Food and agriculture (MOFA) however; a value chain analysis of the challenges and opportunities of the crop's production within this scheme have not been investigated according to GIDA.

### **1.2 Research problem:**

The present challenge for GIDA and the farmers' co-operative is to analyzed how smallholders farmers can benefit from value chain integration, and to promote integration possibilities that allow smallholders not only to supply raw materials but to participate more in the adding of value and/or realisation of additional benefits, for example; a more secure income source. This could provide a real opportunity to improve their economic situation.

Therefore the problem is "smallholder farmer's inability to maximize the full benefits of the chili pepper produced on the irrigation scheme".

### **1.3 Problem owner:**

Ghana Irrigation Development Authority

### **1.4 Objective**

To analyse chilli pepper value chain of smallholder farmers producing under Irrigation with specific focus regarding market access and associated problems.

### **1.5 Research Question:**

1. What is the current situation of the Chili pepper value chain for smallholder farmers within the irrigation scheme?

- a. Who are the stakeholders involved in the Chili pepper value chain?
- b. What are the market dynamics in the Chili pepper value chain?
- c. What challenges do smallholder farmers face in producing Chili pepper?
- d. What challenges are faced by smallholder farmers in marketing their Chili pepper?

2. What upgrading strategies are available for smallholder farmers within the irrigation scheme for an improved Chili pepper value chain?

- a. What opportunities exist for smallholder farmers to market their Chili pepper?
- b. What do smallholder farmers need for them to exploit the existing opportunities?

## 1.6 Justification of the study

One of the key concerns of development organizations operating in developing countries has been the pro-poor growth approach to development issues. The pro-poor approach lays emphasis on the promotion of economic potentials of the smallholder farmer and the disadvantaged (Altenburg, 2007). Nearly 35% of Ghanaians fall below the poverty line and a majority of these people reside in deprived communities where agriculture is the main source of livelihood. The introduction of the value chain as a development intervention tool is therefore both timely and appropriate.

The value chain concept has gained recognition in development projects and programmes with the primary aim of reduction in economic inequality by improvement in market access and income of all actors along the chain.

A well-functioning value chain should create a platform for efficient and mutual benefits for all actors including poor smallholder producers and consumers.

The value chain development concept is therefore a strategic tool to be used for the attainment of one of the major UN's Millennium Development Goals – eradication of extreme poverty and hunger. One surest way of doing this is to unearth the challenges and prospects of the value chain development concept as an intervention tool in agribusiness development among smallholder farmers; hence the study. This research gives an overview, but nonetheless clears indications of the structure, of the Chili pepper value chain, target markets and pertinent issues confronting smallholder farmers in the chain.

Government of Ghana and GIDA also understands that the cost of developing irrigation facilities and schemes is very expensive therefore only high income earning horticultural crops and rice must be cultivated under such schemes and Chili pepper is one of the listed high income horticultural crops recommended to be cultivated.

It is expected that this research will yield recommendations for generating strategies to support the marketing capacities of smallholder farmers operating under Ghana Irrigation authority's irrigation schemes and MOFA and to improve the integration of smallholder farmers into the chili pepper value chain for sustainable income.

The result of the research could also serve as a basis for further research for the Chili pepper industry in Ghana.

## 1.7 Scope of the Study

The study will be organized into six chapters. Chapter one will cover the background of the study, problem statement, the research questions, the objectives of carrying out the study and significance of the study. Chapter two will deal with the empirical literature on the topic under consideration and the conceptual framework.

Chapter three will consider the research methodology with regard to the study area, research framework and strategy. This chapter will also include case study, list of respondents, data sampling and analysis which will be used to answer the research questions.

Chapter four will present the study results.

Chapter five will present the discussions of the research findings while chapter six will consist of the conclusion and recommendation thereof.

## 1.8 Definition of terms

**Value chain:** is a chain of activities that a firm operating in a specific industry performs in order to deliver a valuable product for the market.

**Chain actors** are a group or individuals who are creating and delivering the product. These are owners of the product as it moves along the chain.

**Prospects:** Possibility or opportunity of future success or benefits for the Chili pepper value chain.

**Value chain development:** is strategies used to improve smallholder farmers participation in chain activities and their involvement in management of the chain.

**Value shares:** the percentage of the final, retail price that the actor earns.

**Chain Upgrading:** The process where smallholder farmers move from low value to relatively high value Chili pepper production activities for improved market linkages through increase production efficiency and value addition activities.

**Profitability:** It is the return to investment given by profit divided by cost price expressed as a percentage.

**Smallholder farmer:** is a farmer who regularly earns cash throughout the year rather than normally accessing cash once a season after the sole harvested crops resulting in improved living standards.

**Stakeholders:** these are individuals, groups or organisations that are directly or indirectly involved in the Chili pepper value chain in KTIS. These include actors, chain supporters and chain influencers. They have influence in the operation of the chain by either giving resources (time, assets, and money) or they can benefit from the results (WHF, 2013).

**Chain Supporters:** these are people and companies that do not deal with the product directly, but offers services that add value to the product and increase effectiveness or efficiency of the chain.

**Influencers-** this is the enabling environment which consists of the critical factors and trends that shape the value chain environment and operating conditions.

**Value shares** -This is the percentage of the final retail price that the actor earns. This is calculated as the added value divided by the final retail price and then multiplied by 100 to give as a percentage.

**Marketing mix-** The term is used to describe the different kinds of choices organizations, companies or individuals have to make in the whole process of bringing their product or service to the market.

**Market** - A place where any type of trade takes place and depends on two major participants – buyers and sellers. Buyers and sellers typically trade goods, services and/ or information (Economy Watch, 2010).

**Market access-** defines the conditions that are agreed upon by the actors in the value chain to allow the entry of goods. These conditions might be based on price, quality and or quantity

**Horizontal integration-** is strengthening of ownership and control within one stage of the food system, such as production, processing, for one particular product.

**Contract farming-** Contract farming is an agreement between farmers and processing firms and/or marketing firms for the production and supply of agricultural products under forward agreements at predetermined prices.

**Chain relations-** this is the form of relationship between two or more actors in the value chain

**Consumers-**They are the final user of a commodity in the value chain. They can be either foreign or domestic consumer.

**Institutional consumers:** These are organisations that are final users of a commodity in the value chain. For example a school or company buying food stuff from crop producers.

## 2 LITERATURE REVIEW

### 2.1 Value chain concept

Value chain describes all the activities that are required in bringing the products or services to the final consumers. The actors in the value chain actively seek to support each other so they can increase their efficiency and competitiveness. The actors invest in time, effort and money and build relationships among themselves to reach a common goal of satisfying their consumer needs in order to increase their profits (Kaplinsky, 2000; KIT et. al, 2006).

Roduner, 2007 also defined value chain as an analytical and operational model where the product is hardly ever consumed at the place of production before transformed. This implies that raw materials, intermediate products and final products are owned by various actors who are linked by trade and services, and each adds value to the product.

Development agencies in development cooperation are increasingly aiming at a sustainable growth-oriented integration of developing countries into the world economy since the emergence of globalization and internationalization of trade, and value chain development has received more emphasis especially in development projects and programmes.

Improvements in the productivity of smallholder farmers are pre-requisites to the realisation of full contributions of agriculture to overall growth and development. Recent global policies propose that smallholder farmers can get out of poverty by being better linked to markets. Markets in recent times are changing fast and competition is becoming increasingly fierce. Any business that aspires to stay in the market needs to make sure that their products and services meet continuously changing market requirements and demand conditions (Matthias et al. 2009).

Currently, global value chain approach has been focusing on new linkages in the global economy. The value chain view of global economic integration highlights that access to international markets is not achieved merely through designing, making and marketing new products. Instead, it involves gaining entry into international design, production and marketing networks consisting of many different firms. Understanding how these value chains operate is very important for developing country firms and policymakers because the way chains are structured has implications for newcomers. How can economic actors gain access to the skills, competences and supporting services required to participate in global value chains? What potential is there for firms, industries, and societies from the developing world to “upgrade” by actively changing the way they are linked to global value chains? (Gereffi et al., 2001: 2)

In analysing a chain, Kaplinsky and Morris (2001 as cited in KIT et. al, 2006) stressed that, “There is no correct way to conduct a value-chain analysis; rather, the approach taken fundamentally rests upon the research question that is being answered.”

### 2.2 Value shares:

According to Kaplinsky and Morris (2001), in determining the distribution of values among actors in the chain; one can identify who benefited in its participation in the chain and which actors will benefit more when support is provided. They added that, ‘this is particularly important in the context of developing countries, given concerns that the poor in particular are vulnerable to the process of globalization.’

The value shares among actors in the chain are different between market driven and producer driven chains. Whoever holds the function in physical production to the design and sales have greater control over how, when, and where production takes place, and how much profit gained to each stage and agent in the supply chain (Gereffi, 1994 as cited by Ruben et. al. 2007).

Value share is amount of value that each actor in the chain adds. It is the difference between the price the actor pays for the produce, and the price he sells it for.

It can be calculated by the formula:

#### **Equation 1**

Added value = Price received by actor – Price paid by actor,

Value share = Added value x 100 / Final retail price

Source: KIT and IIRR 2008

### **2.3 Market institutions**

As stated by (Woodhill, 2013); Institutions are the informal and informal rules that govern the interaction among the participants in the chain. It sets how the game is to be played.

Institutions can be classified social, political, and market.

A market institution shapes the interactions among the actors in the value chain. The rules of trading reduce uncertainty through the creation of structures that serve as guide to people on buying and selling, negotiation, transporting and distributing, lending money and payment of loan or debts.

A weak market institution is characterized by few rules, poorly enforced rules, ad hoc arrangements, and few services and chaotic; whilst a strong market institution has many rules such as quality standards, strongly enforced contracts and offers many services (KIT and IIRR, 2008).

The implicit contracts between buyers and sellers are a common form of agreement, and give rise to the different levels of uncertainty and transaction costs. Non-transparency and mistrust among actors occurs because buyers and sellers take advantage of others even when there are prior agreements (KIT et. al, 2006).

Governance in the chain is based on the institutions that exist in the chain. As explained by Gerrifi (2001) that a market form of governance is characterised by an arms-length transaction where it only requires little or no cooperation at all and that price is the basis of the relationship

## **2.4 Value chain development**

Value chain development is a market-oriented approach where all activities of the chain are directed towards the market.

There are always some barriers in most value chains which affects one or several actors in the chain. Some of the barriers in value chain development include quality standards that limit the access to markets, poor infrastructure, unavailability of skilled workers, inaccessibility to credit and inputs, too many regulations or no appropriate governance structure as explained by Van Dijk and Trienekens (2012).

Smallholder farmers face a number of challenges which includes an understanding of the market demand and access, capital requirements and supply of the required volume of quality product at the right time of the season (KIT and IIRR, 2008).

On the other hand, opportunities in the chain come in the form of value chain development.

Intermediary organizations can lead the chain and integrate farmers as chain partners, activity integrator or co-owner (KIT and IIRR, 2008). "In using the value chain approach for enterprise development, it seeks more than just linking the micro-enterprises to buyers. It is also developing the changes in the behavior and improving the quality of relationship between and among the players to increase the competitiveness of the chain, while ensuring a broad distribution of benefits, skills, and income levels of the Industry." (USAID, 2008).

## **2.5 Chain Upgrading**

Upgrading refers to the acquisition of technological capabilities and market linkages that enable firms to improve their competitiveness and move into higher-value activities as stated by Kaplinsky and Morris (2001). Chain Upgrading allows resource-poor rural communities to technological, institutional and market capabilities that empower to improve their competitiveness and move into higher-value activities. Upgrading, which also means capturing more value; can be defined as increasing the competitiveness of the value chain by taking it into a new direction towards a new market, market segment or customer? Upgrading at the firm level is defined in terms of investments that increase value added.

### **2.5.1 Pre-conditions for upgrading**

Pre-conditions for upgrading can vary and depends on each particular case. Research findings on value chains relating to factors that determine different upgrading possibilities are still ongoing even though there are results available. Upgrading being a complex topic with many dimensions, this paper will limit its finding to the scope of this research as follows.

To begin with, upgrading can be greatly influenced by the learning processes that are available to the actors of a chain. As stated by Stamm (2004), firms are able to improve their position in the value chain as a result of learning processes.

Learning on the other hand is also influenced by other factors such as the governance structure of a value chain. It is known that apart from production systems, knowledge

systems exist in value chains through which different kinds of information and ideas are exchanged between each stage of a chain (Humphrey and Schmitz, 2002).

Organisation of information flow and its intensity depends on the interest of the leading party in a chain, which is most times the buyer.

It can be understood that information flow from a buyer to his suppliers is limited to the amount that favours the buyer (Humphrey and Schmitz, 2002). Other areas important for learning processes are availability, location and access to extension services, market information, and further education

The strategic purpose of a firm and the policy environment, innovation processes and investment needs are the other pre conditions for upgrading (Humphrey and Schmitz, 2002).

The more multifaceted a value chain becomes the more challenging are the needs to realise any kind of upgrading. Hence from a certain complexity of a value chain onward, investment possibilities are a crucial aspect for realising upgrading chances (Humphrey and Schmitz, 2002).

### 2.5.2 Upgrading as an entry barrier

Upgrading is not just an opportunity to improve an actor's own position but more importantly a prerequisite to secure position in a chain. As there is competition in any chain between actors and with other chains, one way of securing a good position is to ensure that competitors don't upgrade faster or better than themselves.

Upgrading can therefore be used in setting an entry barrier in this context. Actors/players use entry barriers to hinder competitors from overtaking the one position or even prevent or at least slow down an integration of new actors in a certain value chain. Entry barriers, which favor certain actors in some cases, already exist such as high investment costs, limited access to credits and climatic conditions.

Besides individual upgrading, overall upgrading of a chain that leads to higher value final products can have positive impacts for poor population sections, too as can be seen in the literature (Roduner, 2004).

With regards to the possibilities for poor population sections or smallholders upgrading, their chances rest in the process and product upgrading that can be reached through technical improvements and better production know how.

Chances for smallholder farmers to acquire new functions in a chain are limited, nevertheless actions should be undertaken to try to realise this kind of upgrading

### 2.5.3 Chain upgrading strategies for smallholder farmers

Farmers and their organizations may improve their position in the chain in several different ways. Riisgaard et al (2010) identified seven different upgrading strategies for smallholder producers for improved performance or position in the chain hence increasing their rewards and/or reduce their exposure to risk.

**Process upgrading** – improving processes, such as increasing the efficiency of internal processes, improving client management, or reducing waste.

**Product upgrading** – introducing new products or improving old products to give them greater unit value, complying with standards for those products, or shifting away from high-value markets to gain more value from bulk markets.

**Volume upgrading-** producing more of the product to increase sales.

**Functional upgrading** - changing the mix of activities conducted to gain more value from the chain, such as taking on a new function in the chain. Changing the scope of activities carried out within the firm as a means of adding value is referred to as functional up-grading. Functional upgrading will lead to vertical integration; where an actor performs more than one value chain function.

**Functional 'downgrading'**- this refers to when the producer moves one node down the chain; for example from processing down to primary production due to low profitability/benefits in processing.

**Vertical integration-** this refers to producers taking up new activities either upstream or downstream the chain for example processing, wholesaling and retailing. It also means getting a better deal through closer and longer-term business ties with buyers. Vertical integration may occur for a number of reasons including stable supplies, better quality control, improved information flow, scheduling and reduction in price risk. It represents a move away from spot or repeated market- type transactions to an increasing use of contracts between producers and other actors in the chain.

**Horizontal integration-** This describes agreements among producers to co-operate among themselves over input provision, marketing, certification and crop insurance in order to reduce costs, increase revenue and mitigate individual risks.

## 2.6 Gender perspective in value chains

Gender refers to the meaning the society gives to the roles of women and men resulting in certain power relations and dynamics in access and control over resources. It is the socially constructed difference between men and women. The consequence is the inequality for people to make their life choices. It is very important to distinguish the areas of gender inequality that are relevant to the efficient operations of value chains or for facilitating inclusive value chain development strategies or innovations.

Understanding the position of women in value chains and how the changes in a specific value chain such as the smallholder value chain in KpandoTorkor irrigation scheme might affect gender inequality and the main constraints for women in terms of gaining from value chain participation requires one to place gender in the context of intra-household bargaining and of broader social processes dimensions (Wyrod, 2008).

From a value chain or business perspective, it makes sense to look into different roles and tasks of men and women in value chains and to use a gender lens while identifying and addressing bottlenecks for value chain development.

## 2.7 Marketing mix

American Marketing Association defines marketing as the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchange and satisfy individual and organizational objectives. In most marketing textbooks the marketing mix management paradigm and its Four Ps are still considered *the* theory of marketing.

There are four things an enterprise needs to get right in order to effectively market a product or service. This includes; Product, Price, Place and Promotion. These four elements are

known as the marketing mix or the 4Ps. These four elements should be viewed as one unit and structured to support each other; Otherwise a firm's marketing strategy will be confusing and uncoordinated.

Marketing mix is a tool used to test an existing or new market strategy and involves the different kinds of choices an organisation has to make in the whole process of bringing a product or a service to the market to meet the customer requirements. The four Ps are product, price, place and promotion.

**Product:** This is the good or service offered to target customers and the specific product quality attributes include; its quality features, brand name, physical appearance, packaging, different ranges, , warranty and customer service. This should meet the needs of a particular target market therefore adequate knowledge of what the target market wants and what competitors are supplying is important in offering a product that is appealing to customers.

**Price:** This refers to the value given to the product and should cover production costs including profit margin in order to generate revenue for the business. The pricing approach selected in an enterprise should reflect the position of the product in the market and is based on the product, customer demand and the competitor environment. The price your target market are prepared to pay for your products/services depends on product features and the target market's budget

**Promotion:** Promotion is any activity done to raise awareness of a product or to encourage customers to purchase a product. Promotion may also involve public relations, open house days, field days with customers, and sales promotional programs to be in direct contact with consumers and building sustainable market relationships.

**Place:** The Place element of the marketing place is about where the product is made, where is it stored and how is it transported to the customer. This describes distribution channels used to get the product to the target customers or consumers and depending on the product this may involve direct sales, retail or through a distributor. The place should ensure that the product gets to the right place at the right time without damage or loss. The market mix is shown in figure 1.

**Figure 1 Market mix**



Source: [www.learnmarketing.net](http://www.learnmarketing.net)

### **2.8 Business model canvas**

The business model canvas is a tool for designing an innovative business. It is a strategic management and entrepreneurial tool that allows describing, design, challenge and invent and pivot a business such as production business involving smallholder farmers. It is a tool that fosters understanding, discussion, creativity and analysis of a business. It is a faster and more effective way to communicate with internal and external stakeholders of a business.

**Figure 2** The business canvas model



Source: Osterwalder, 2008

### 2.9.3 Chili exports from Ghana:

Exports of chilies from Ghana to the European Union (EU) have seen an increase according to a World Bank report (2011). During this period, the increase has been almost five-fold according to the report. Checks at Ghana Export Promotion Authority (GEPA) rather indicates a decline in the volumes of exports as can be seen in table 1.

**Table 1 Data on Chili pepper export from Ghana**

YEAR	WEIGHT (KGS.)	VALUE (US \$)
<b>2006</b>	<b>1,958,734</b>	<b>646,081</b>
<b>2007</b>	<b>1,578,055</b>	<b>622,219</b>
<b>2008</b>	<b>1,619,830</b>	<b>714,614</b>
<b>2009</b>	<b>951,905</b>	<b>470,148</b>
<b>2010</b>	<b>984,374</b>	<b>350,442</b>
<b>2011</b>	<b>1,02,710</b>	<b>1,174,964</b>
<b>2012</b>	<b>734,000</b>	<b>720,911</b>
<b>2013</b>	<b>984,503</b>	<b>586,089</b>

Source: GEPA

### 3 METHODOLOGY

The research methodology consists of the research area, research framework, data collection and how the collected data was analyzed and interpreted. The research is both quantitative and qualitative based on empirical data collected from case study interviews and secondary data obtained from desk study.

#### 3.1. The research area

Kpando Municipality is one of the twenty five Municipalities and Districts in the Volta Region of Ghana and it is one of the oldest in the country. The Municipality lies within Latitudes 6° 20' N and 7° 05' N, and Longitude 0° 17' E. It shares boundaries with Biakoye District in the north, Afajato South to the East and North Dayi District in the south. The Volta Lake, which stretches over 80km of the coastal line, demarcates the western boundary. The Municipality covers approximately a total land area of 820 square kilometers representing 4.5% of the Volta Region with almost 30% of the land submerged by the Volta Lake.

Kpando, the Municipal capital, is about 70km from Ho, the Regional Capital. Torkor is one of the towns within the municipality. The smallholder farmers are producing Chili pepper under irrigation within the Torkor town (Kpando district, 2006).

The Municipality's is basically dominated by agricultural activities and it is estimated that about 62% of the active population is engaged either directly or indirectly in this sector. The climatic condition of the Municipality favorably supports variety of crops production. Crop production is characterized by small farms land holdings with average farm size of 0.5 ha, the use of simple farm tools and techniques, bush fallowing or shifting cultivation practices, over reliance on rain-fed agriculture and low level of inorganic fertilizers and other chemical application according to the Ministry of local government and rural development (MLGRD, 2013).

**Figure 3 Map of Kpando municipality showing Torkor area**

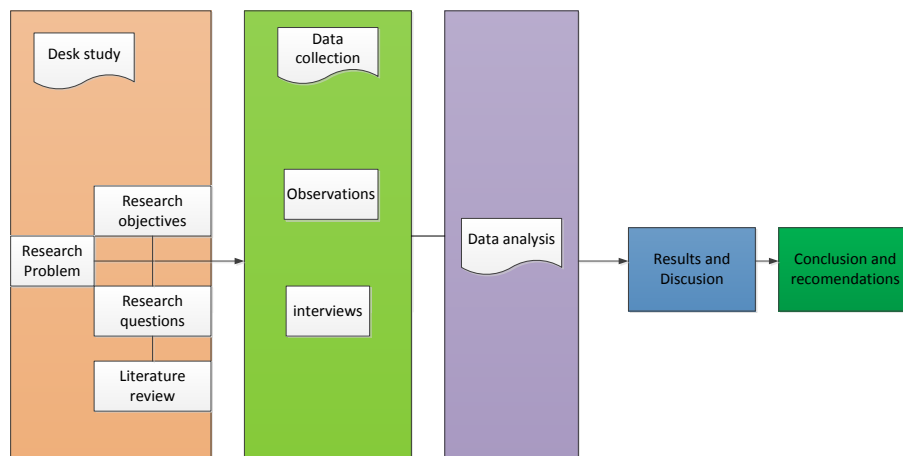


Source: Google maps

### 3.2. Research Design

The research was done by desk study; literature review (desk research) and field study. The data of the field study was analyzed separately. The results was then compared with literature found during discussion section of this report. At the end, conclusions and recommendation were made based on the results and discussion to finalize the report. The research framework used is illustrated in Figure 4.

**Figure 4 Research framework**



Source: Author

### 3.3. Research strategy

A combination of desk study and case study methods was used to answer the research questions and objective of the research.

An interview guide was developed and a semi-structured interview conducted for selected respondents. Interviews with farmers, Project/Scheme manager, Agents, wholesalers, traders, exporters and retailers connected to chili pepper chain were be carried out to gather information related to the research questions and objective. This served as the primary unit of analysis for this study.

**Table 2 Research strategy**

Research question	Sub-question	Key words	Source of information	Research strategy
1	a	Stakeholders, Chain actors, Functions	Specialization books, Farmers, other chain actors, and supporters	Interviews for farmers and extension agents.
	b	Markets, channels, information, cost, relationships, profits, shares.	Journals, specialization books, Farmers, other chain actors, and supporters	Desk study, interviews on the production, processing and marketing techniques
	c	Constraints/challenges, barriers	Journals, specialization books, Farmers, other chain actors, and supporters	Desk study, interviews on constraints with the respondents and informant
2	a	Marketing challenges	Specialization books, farmers, and informants	Desk study, interviews
	b	Marketing opportunities	Specialization books, informants and all actors	Desk study, Interviews
	c	Marketing and upgrading strategies (product availability, packaging, new markets)	Farmers, wholesalers/traders, retailers and exporter, Journals, books, documents from actors.	Desk study, Interviews

Source: Author

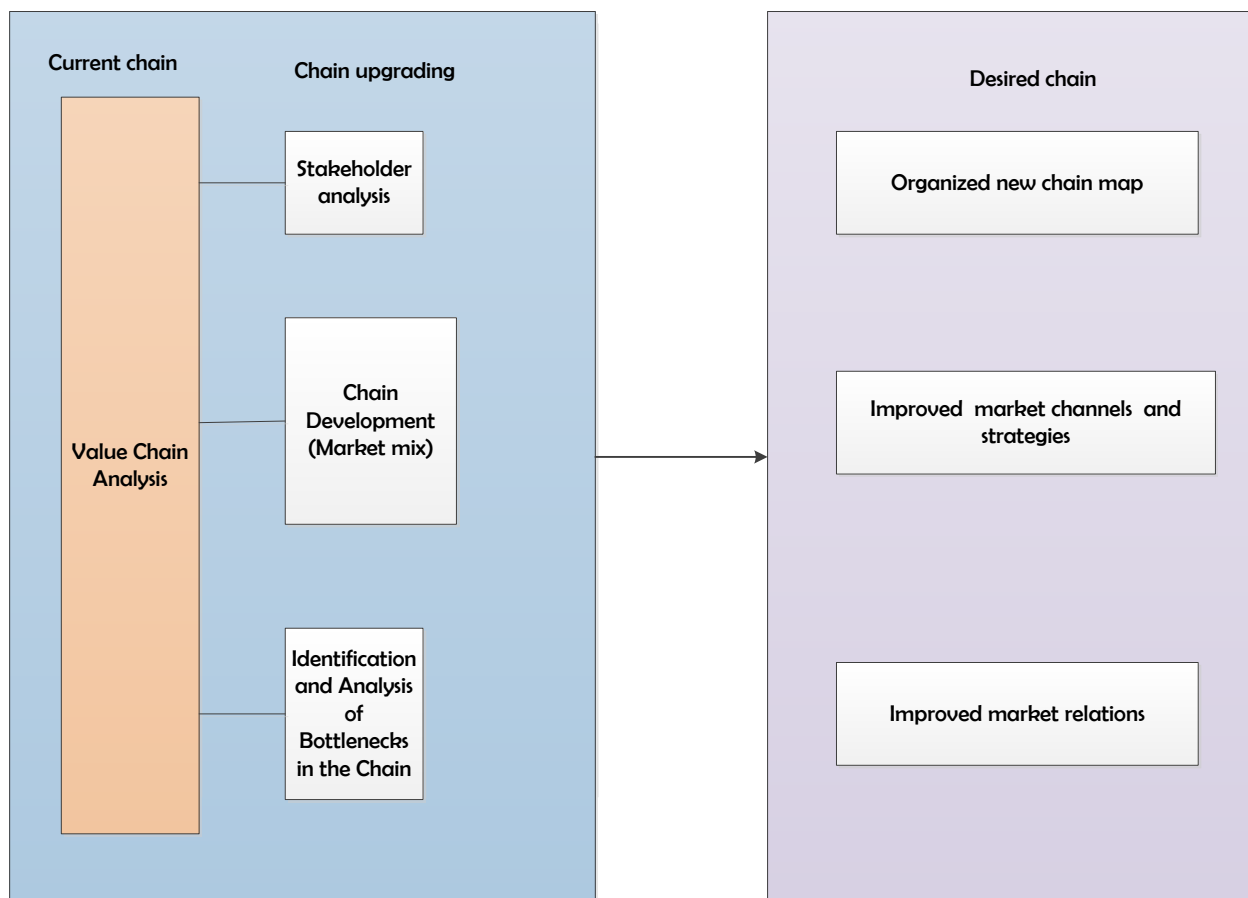
### 3.4. Conceptual framework

#### 3.4.1. Value chain analysis:

Value chain mapping will be used to identify the main actors, flow of products, money, information and how marketing is done and by whom.

The market mix is used to see how best smallholder farmers can market their products. Inclusive business model will be used to model the new business case for smallholder farmers using the Business Canvas Model. The conceptual framework of the research can be seen in figure 5.

**Figure 5 Conceptual framework**



Source: author

### 3.5. Data Collection

#### 3.5.1. Desk research

Prior to the commencement of the fieldwork, desk research was carried out to obtain literature and secondary data on the smallholder Chili pepper value chain; this will be obtained through current available books on the internet, journals and annual reports of the Ministry of Food and Agriculture (MOFA) and Ghana Irrigation Development Authority (GIDA), as well as reports from related stakeholders and organizations such as FAO will be used as supplement information. The desk study will be used to discuss the results.

#### 3.5.2. Case study.

A case study with face to face interviews for actors and stakeholders in the Chili pepper chain was carried out. Semi structured interview with aid of checklists was used to carry out these case studies. This was combined with observation grids and content analysis of reports in order to obtain in-depth information on the whole value chain. Details of the nature of interviews are described in table 3.

**Table 3 Details of respondents**

Activity	Number
Focus group discussions with smallholder farmers	6
Interview with two smallholders who produce for the local market	2
Interview with two smallholders who produce for the export market	2
Interview with two female smallholder farmers	2
Interview with one Extension worker from the study area	1
Interview with four exporters who buy from the farmers	4
Interview with two agents who deal with farmers and exporters	1
Interview with two retailers and two wholesalers	2
Interview with the irrigation scheme manager of KTIS	1
Interview with two consumers	2
Interview with supporters of the chain	3
Total number of interviews	20

Source: Author

### **3.5.3. Focused group discussions**

Focused group discussions are used to collect data which cannot be conveniently interpreted with statistics. It allows participants to agree and disagree on the topic and gives more insight on issue at stake (Morgan, 1998).

A focus group discussion with a small group of six (8) people was led by the moderator (interviewer) in a loosely structured discussion of various topics of interest but with emphasis on the business canvass model. The course of the discussion will be planned in advance and moderator will rely on a pre-planned outline to ensure that all topics of interest are covered. Two focused group discussions will be done with female member's only participants and a combined group of males and females focused discussions will be done. Separating the participants according to gender will aid the gathering of gender issues when participants feel more conducive to do so.

Participants for the focused group discussions were sampled from clusters of producing for the local market, the export market and gender (female producers). For each sex 4 people will be chosen from a cluster.

### **3.5.4. Sampling**

Samples were chosen based on characteristics relevant to the research and most informative. It was also being based on those most accessible or most willing to take part. As a result the sample outcome was homogenous.

Recent research (Cohen and Crabtree, 2004) defines a homogeneous sampling as the process of selecting a small homogeneous group of subjects or units for examination and analysis.

A homogeneous sampling was used in this case because the goal of the research is to understand and describe a specific group in depth which in this case is the smallholder farmers producing within the KTIS.

### **3.5.5. Interviews**

Face to face interviews with farmers and other actors in the chain, as well as key informants, supporters were conducted. The interviews were done using a check list with open questions and probing and follow up questions depending on the type of answer from the respondent. The questions for the check list was guided by the research objectives and provided answers to the sub questions. Target group and information collected is shown in table 4.

**Table 4 Interview details**

Target	Interviewee	Information to be collected
Smallholder farmers	Farmers:	<p>a. Identify stakeholders involved in the Chili pepper value chain and their functions</p> <p>b. Market dynamics in the Chili pepper value chain: information flow, marketing channels, costs, profits, value shares.</p> <p>C. challenges smallholder farmer's face in producing Chili pepper: access to inputs, market information, finance, technical assistance.</p> <p>d. Challenges faced by smallholder farmers in marketing their Chili pepper: market requirements, packaging, available markets.</p> <p>e. Information on existing opportunities for smallholder farmers to market their Chili pepper and what farmers need to do to exploit existing markets.</p>
Informants	Extension officer/ and Agronomist	The same information was ask as with the farmers to validate the information given by the smallholder farmers and well as have an overview of the whole chain.
Wholesalers & Retailers	Wholesalers and Retailers that buy directly from the smallholder farmers	Information on sources of their supplies, requirements in terms of volume, quality and frequency of supply expected from the producers, value shares, profits, costs, and the relationship they have with farmers. Also information on marketing opportunities and challenges they encounter.
Exporters and Agents	Exporters	Information on sources of their supplies, requirements expected from the producers, value shares, profits, costs, and the relationship they have with farmers. Also information marketing opportunities and challenges they encounter

Travelling traders /middlemen	Travelling traders /middlemen	Information on sources of their supplies, requirements in terms of volume, quality and frequency of supply expected from the producers, value shares, profits, costs, and the relationship they have with farmers. Also information on marketing opportunities and challenges they encounter.
Consumers	Open market, institutional consumers.  The military hospital was chosen because it has dual consumers and also has a characteristic of a restaurant.	Information on: Chili pepper products they prefer  Where they buy their Chili products and in what form.  The quantities and the frequency  Method of delivery/channel they prefer
Supporters	Financial institutions, input dealers, GEPA.	What kind of services are you offering to the farmer or other actors and how these services are provided?  The challenges that the supporters face in providing these services to the farmers or other actors in the chain?

Source: Author

### 3.6. Data analysis

Data collected from interviews was processed into transcripts and then analyzed by content analysis. Content analysis was done where documentation, conceptualization, categorization, examining of relationships, displaying of data and authentication of conclusions was done. (Silverman, 2011)

The data was further processed through stakeholder analysis, chain map, and marketing mix to illustrate the structure of the Chili pepper value chain and the marketing methods used in the chain, as well as strategies for improving marketing adapted from KIT and IIRR (2008). SWOT analysis was finally done for the KTIS smallholder farmers to draw a logical conclusion.

### 3.7. Limitations to the study:

Due to the short period allotted in this study, the focus was mainly on the smallholder farmers producing within the KTIS.

Another limitation was on the scope of the information that was provided by the other actors within the chain involved since they are confidential and may reveal their source of competitiveness also the willingness to share some of this information was a limitation.

## 4 RESULTS

This chapter presents the information gathered from the interviews conducted with the respondents as well as a group discussion with farmers using the business canvass model. The interviews were conducted between 23<sup>rd</sup> July and 15<sup>th</sup> August 2014 for the following stakeholders; smallholder farmers, Exporters, Agents, market women (traders), consumers, GIDA, MOFA and GEPA.

Another interview session was done for potential markets that included middlemen/travelling traders, institutional consumers and supermarkets.

Each interview has its own transcript and the entire transcripts were processed to produce the results below. The results of the business canvass model can be seen in appendix 6.

### 4.1 Current situation of the Chili pepper value chain

#### 4.1.1 Description of characteristics of main chain actors

##### **Smallholder farmers (Producers):**

Farmers producing within the irrigation scheme are all members of the KTIS co-operative society (producer organisation). The co-operative has an executive committee which jointly manages the scheme with GIDA based on the agreement of Joint Irrigation System Management (JISM) was signed in 2006 between the Kpando-Torkor Farmers Association and GIDA. GIDA continue to provide a Project Manager (PM) and a Pump Operator (PO). MOFA also made available an extension agent to assist the farmers in improving the irrigated agriculture techniques. The government of Ghana (GOG) through MOFA provides some inputs mainly fertilizers at a subsidised rate to the farmers within the scheme. Farmer's practices crop rotation system of farming in the area. The land has a potential irrigable area of 356 hectares, with only 70 hectares developed for crop production but currently only 60 hectares has been put under cultivation.

**Table 5 KTIS farmer's co-operative membership**

Gender	Membership	Percentage (%)	Active membership	Percentage (%)
Males	69	60	18	60
Females	46	40	12	40
TOTAL	115	100	30	100

Source: Interview results

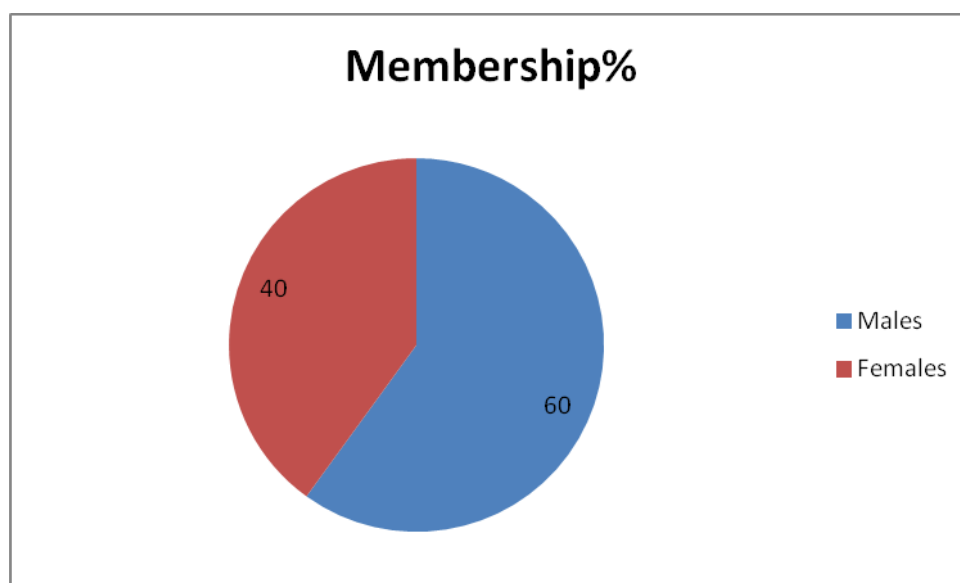
The operational cost of smallholder farmers in the study area, as indicated in table 6 shows that a total cost of GH¢6.84 in producing 6 kg box of chilies pepper.

**Table 6** Operational cost per 6kg box of Chili pepper for smallholder farmers

Item	Costs (Gh¢)
Inputs	1.04
Land preparations	1.53
Labour	3.74
Other cost (ISC)	0.54
<b>Total</b>	<b>6.84</b>

Source: Interview results

**Figure 6** Membership of KTIS farmers



Source: Interview results

They are therefore a homogeneous group with similar problems and characteristics. Land size averages 2 acres for each member.

Though the group has a membership of 115 members, only 30 are active producers out of which 12 are females and 18 males.

As a co-operative group led by the chairman, its executives and the scheme manager they prepare production plan (calendar) and budget.

Farmers sell at farm gate and do not incur any cost after harvesting. According to the scheme manager; farmers sell collectively to exporters but sometimes individually to market women/processors.

### **Exporters:**

Four (4) exporters purchase their products from these farmers sometimes they (exporters) pre-finance the production of smallholder farmers.

From observations and interviews, the exporters also have their own farms where they produce chilies and other vegetables. They do not rely completely on smallholder farmers due to the erratic nature of production and supplies. A visit to one of the exporter's farm

confirms this fact. He has cultivated various Asian vegetables purposely for the export market. Figure 7 depicts an exporter's Chili pepper farm and freshly harvested Chili packed.

**Figure 7: A Chili pepper farm and freshly harvested Chili in a 6kg boxes**



(i) A Chili pepper farm

(ii) Freshly harvested Chili pepper

Source: Interview

According to one of the exporters; “the export of Chili pepper is related to other vegetables because customers in Europe always request assorted vegetables which include the chilies”.

Exporters also employ the services of agents who move into the production areas to buy the Chili pepper for them. All exporters belong to the Ghana Association of Vegetables Exporters (GAVEX).

Exporters do not have formal contract with farmers but operates based on trust.

Exporters bear the cost of transporting the chilies from the farm gate to the final destination. They also do sorting, grading and packing. The operational cost incurred per 6kg box is shown in table 7:

**Table 7 operational cost of exporters**

Item	Cost (Gh¢)
Buying price for Chili pepper per 6kg box	12.00
Overhead cost	4.00
Freight cost	0.10
One empty box	2.50
<b>Total</b>	<b>18.60</b>

Source: Interview results

As reported by the exporters, farmers in PTIS are aware of the quality standards required of the Chili produced which are; straight, green and not over grown chilies, with the stalk intact.

### **Agents:**

These are very important group in the chili pepper chain, though they seem to be hidden. They come in two categories; the first group is those who are on the payroll of exporters. They are sent by the exporters to search and buy the chilies.

While the other group who operate on their own (independent agents); link the chilies and sell to exporters through the control of market information. There are two of such independent agents who currently operate with KTIS farmers. They provide lead for exporters as to where to go and buy the chilies. As reported by one of them *"I buy for exporters and advice farmers to grow particular varieties based on exporter's demands"*.

The agents sometimes buy on credits from the farmers and pay later upon sale of chilies to exporters (on rare occasions). They have no formal contracts with farmers or exporters but have a mutual relationship with both actors.

### **Wholesalers, Processors and Retailers (Market women):**

These actors are presented into a cluster (group) because the same people perform these functions though they control only about 20% of the total volumes produced by farmers. This group of women plays multiple roles in the Chili pepper chain. They are involved in processing, wholesaling and retailing to local consumers. According to one of them, she buys her pepper from farmers within the irrigation scheme and from other nearby communities especially when the KTIS farmers are not producing in the rainy seasons.

They are not in any recognizable trade organisation and have no formal agreements with farmers. Most of the Chili pepper traders within the community are not members of any formal organisation, though they belong to the women traders associations in the community. There was no external labour input used by the market women. Figure 8 shows a picture of processed Chili.

**Figure 8 Processed Chili pepper**



**(i) Dried Chili**



**(ii) Powdered Chili**

Source: Interview results

**Table 8 Cost of operations and sales of market women**

Item	Cost Gh¢
Chilies of 6kg/bucket	10.00

Sales:

Item	Selling price Gh¢
Dried and powdered Chili pepper	960.00

Source: Interview results

### **Input suppliers:**

Inputs used by smallholder farmers for production basically include seeds, fertilizers and agro-chemicals. These agro-chemicals are sold by input dealers who have shops spread out throughout the region. From the research findings, it came out that of the 30 active farmers, 5 of them (16%) purchase these inputs from the capital city through contacts with agents as one respondent farmer said *"I buy my inputs from agro-chemical stores in Accra; buy certified seed, fungicides and foliar fertilizers from input dealers"*.

The rest of the farmers (84%) buy their inputs from the community and neighboring towns. This was corroborated by the scheme manager assigned to the farms.

However subsidized fertilizers are supplied to the farmers by the government of Ghana (GOG) through GIDA and MOFA.

### **Consumers:**

As stated by the scheme manager and confirmed by the extension officer in the district, about 80% of the total volumes produced are exported to Europe; mainly to the United Kingdom (UK).

The exporters stated during the interviews that the consumers of these products are mostly the Asian communities. They export this Chili pepper alongside other Asian vegetable like luffa, ravaya, long marrow, tinda, green pawpaw etc to mostly Asian retail shops for sale to consumers.

The rest are sold to the market women who then process some and sell to local consumers within the locality in the open market or homes. Unlike the international consumers, the local consumers have no serious quality requirements but consider volumes. Chilies are sold in fresh, dry and powdered form to consumers within the locality.

#### **4.1.2 Chain Supporters:**

##### **GIDA:**

This is a government organisation supporting the activities of farmers by developing irrigation facilities as well as providing technical assistance to farmers. GIDA have assigned a scheme manager who jointly manages the irrigation scheme with the farmers' co-operative group.

##### **MOFA:**

MOFA also supports this Chili pepper chain of these farmers by assigning an extension officer who provides technical training and supervision to the farmers. MOFA in collaboration with GIDA and Input dealers provide fertilizers for the farmers at a subsidized rate.

### **Financial Institutions:**

According to the research findings, there are many financial companies within the municipality but three of them currently support the farmers with loans for their production activities. They include Weto rural bank, Agricultural Development Bank and KpandoTorkor credit union.

In my interactions with the loans and credit officer two of the financial institutions (Weto Rural bank and ADB), they revealed that farmers have consistently refused to pay back loans given to them few years back. The Weto rural bank loans officer said *"sometimes we have to cease their collaterals, even with that they still default in paying back the loans"*.

### **PPRS**

The Plant Protection and Regulatory Services (PPRS) offer services to the various actors in the chain in the areas of compliance to plant protection agreements. In this Chili pepper chain, they educate farmers and create awareness on the right usage of chemicals and the benefits of using certified seeds.

### **GEPA**

The mandate of Ghana Export Promotion Authority (GEPA) is product Development and Promotion especially non-traditional export...

GEPA supports the vegetables chains by facilitating and providing technical services from production to final consumer.

### **GAVEX**

Assist its members who are mostly exporters to operate as individual companies, the association supports its members and the farmers involved with them to obtain GlobalGAP certification and meeting other standards.

### **GIZ**

The German Society for International Cooperation (GIZ); an international development and donor organisation also provided training in planning and record keeping for the smallholder farmers producing under KTIS.

## **4.2 Value shares of actors in the Chili pepper chain**

It must be noted that in computing the value shares among the actors in the chain, figures are estimations based on information gathered during the interview with respondents. There were limitations due to unavailable records as well as unverifiable information given by actors. The figures are therefore reported facts from the respondents during the interviews.

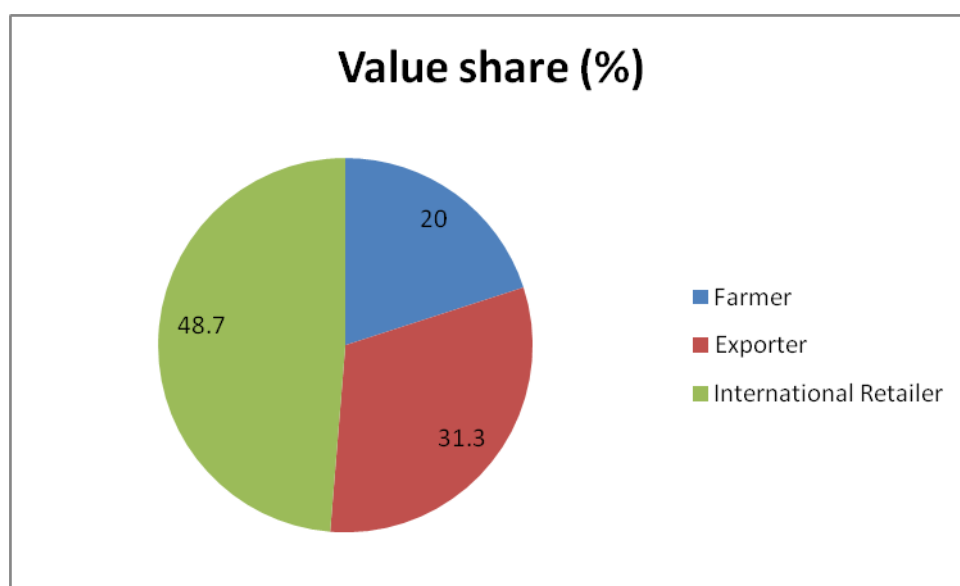
Data on the two chains observed is presented as depicted in figure 11.

<b>Table 9: Value share for the smallholder farmer selling to Exporters (Chain i)</b>						
Chain actor	Variable costs (GH¢)	Revenue (GH¢)	Gross income (GH¢)	Added value (GH¢)	Gross margin (%)	Value share (%)
Farmer	1.14	2	0.86	2	43	20
Exporter	3.09	5.13	2.04	3.13	39.80	31.30
International retailer	28.23	47.70	19.47	42.57	40.85	48.70

Source: From interview.

Exchange rate: £1.00 = GH¢6.27

**Figure 9: Value shares of value chain i**



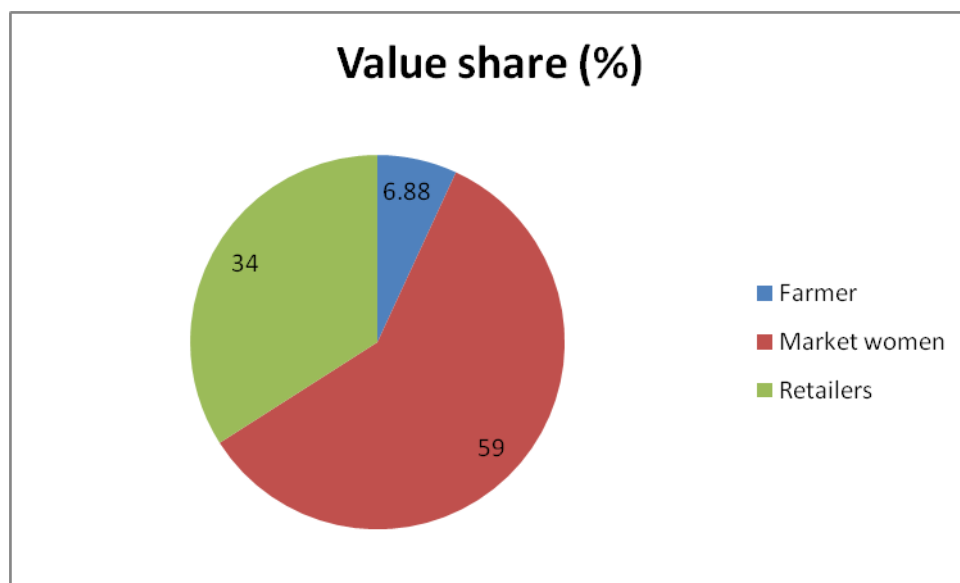
Source: Interview results

<b>Table 10: Value share for the smallholder farmer selling to the market women (Chain ii)</b>						
Chain actor	Variable costs (VC) (GH¢)	Revenue (GH¢)	Gross income (GH¢)	Added value (GH¢)	Gross margin (%)	Value share (%)
Farmer	1.14	1.67	0.53	1.67	37.74	6.88
Wholesaler/processor	1.67	16	14.33	14.33	89.56	59.00
Retailer	15	24.25	9.25	8.25	37.00	34

Source: From interview.

Exchange rate: £1.00 = GH¢6.27

**Figure 10: Value shares of chain ii**



Source: Interview results

### **4.3 Market dynamics**

#### **4.3.1 Markets and marketing channels**

From the research findings, smallholder farmers sell their produce at farm gate to the exporters and market women within the area who process some of the chilies in dried or powder form for sale to consumers within the locality. The only place of sales for farmers is therefore at the farm-gate. They sell collectively to buyers who are mostly exporter's negotiations. Farmers sell to the highest bidders though once a while an exporter may prefinance their production and in this case they are obliged to sell to the particular exporter.

#### **4.3.2 Relationships and information flow**

Smallholder farmers producing at KTIS have no formal or contractual relationship with their buyers. They get information on prices through contacts with other producers, agents and exporters by physical contacts and mobile communications.

#### **4.3.3 Chain sustainability.**

A well-functioning value chain should sustainable in being beneficial to the people, the environment (planet) and economically viable (profit).

Table11: Shows the sustainability aspects of the chain through information gathered by means of interviews and observation in the study area. `

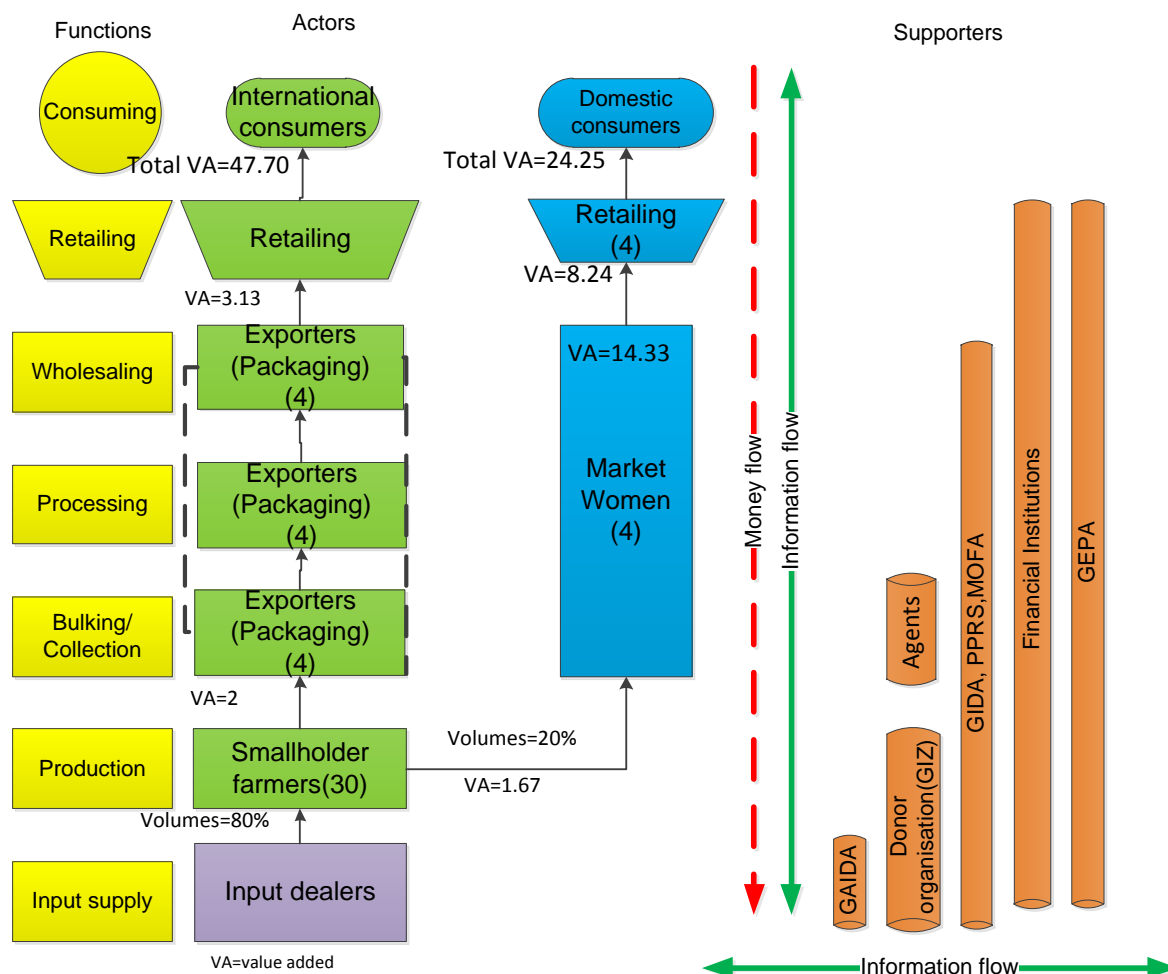
**Table 11: sustainability aspects of the Chili pepper chain**

People	People are engaged in income generation activities at various levels in the chain.
Planet	The land and the environment well managed except few traces of poor disposal of agro-waste.
Profit	All actors confirm making profit and other socio-economic benefits from the chain.

Source: Interview results

#### 4.4 The current Chili pepper value chain map of KTIS

**Figure 11** chain map



Source: Interview results

#### 4.5 Strengths and weaknesses of the Chili pepper chain

In ascertaining the challenges and opportunities in the chain, a focus group discussion (FGD) was conducted among the smallholder farmers. The business canvass model and SWOT (strengths, weaknesses, opportunities, and threats) was used in identifying the constraints and opportunities in the chain. But in this section only the constraints and opportunities results are presented. The business canvass model is presented in the appendix 6.

##### 4.5.1 Production

Farmers operate on small land area size per farmer for cultivation, irregular and low production volumes and supply to meet the demands of buyers were the main problems actors mentioned.

There has also been incidence of disease in some farms; anthracnose and nematode recorded.

#### 4.5.2 Financial

High cost of production in terms of seed, fertilizers, other agro-chemical and hired labour.

As stated by one farmer, *“our biggest problem is high cost of inputs and production costs, and unavailability of financial assistance. Since most of us are rural dwellers without capital to invest in the business”*.

#### 4.5.3 Technical

They also have problems getting access to the seed since it is imported F1 seeds. There is a problem of poor irrigation infrastructure which does not allow all year round production. Absence of storage and cooling facilities and measuring scales.

#### 4.5.4 Marketing

One female farmer commented that, *“I wish the leadership of the co-operative will involve every farmer in the negotiation of prices with the exporters since the price they agree on is not always fair”*, indicating that some farmers are not satisfied with the pricing or there is lack of transparency in price negotiations.

According to her, the main problem she faces is financial assistance to expand to the bigger markets in big towns.

She stated that she cannot send produce to the bigger town markets because the volumes she deal with is too small

Answers from respondent farmers indicates that they have limited access to market since they sell everything at the farm-gate to buyers since sending their produce to the other markets means another cost (transport).

#### 4.6 Opportunities in the Chili pepper chain

During the discussions, it came out clearly that there are opportunities to take advantage of in the chain. Participants agreed that in future they can sell to other potential buyers like the supermarkets, restaurants, and institutions. As one farmer later remarked during the group discussion that there are no limits to the opportunities hence they must take steps now. Table 12 is a market mix table showing the current method of marketing by smallholder farmers.

**Table 12: The Market Mix**

<b>Product</b>	A premium variety of Chili pepper; called bird's eye Chili produced under irrigation in the dry season in order to take advantage of high prices during that period when Chili pepper is scarce.
<b>Promotion</b>	Chili sales is promoted through verbal and physical contacts and mobile communication with buyers
<b>Price</b>	Price is reached through negotiations with buyers, taken into consideration the cost of production of the farmer and the operational cost of the buyer.
<b>Place</b>	Sales done mostly at farm gates.

Source: Interview results

#### **4.6 Results of interview with potential actors and markets**

As stated in the methodology chapter in table 4 on details of interviewee, the following respondents were interviewed because they are potential actors and/consumers since they deal with and consume Chili pepper on regular basis. They are therefore relevant to the research objective.

##### **4.6.1 Interview with travelling middlemen**

According to this middleman, he goes around the production areas around, Greater Accra, Eastern, Volta and Central regions of Ghana to source and buy assorted vegetables including Chili pepper from smallholder farmers and wholesalers. Vegetables usually bought from these farmers include Chili pepper, okra, tomatoes, garden eggs, onions and leafy vegetables.

According to him since production of chilies and other vegetables by farmers is irregular, she does not enter into formal contracts with them but rather buy as and when it is available. He however has formal contract agreement with institutional consumers who she supplies to.

Prices of chilies are not fixed and it is seasonal. In major production season (rainy season) fresh chilies weighing about 50kg is bought at Ghc 150.00 and sold to institutional consumers for Ghc 200.00

In the minor seasons (dry period) where the product is scarce, such a weighted bag is purchased for Ghc300.00 and sold for Ghc400.00. There are two types of institutional consumers which middlemen or travelling traders supplies products to. They are private restaurants and institutions as well as government institutions.

Concerning quality standards requirements; costumers are concern with the volumes rather than quality. Meaning quality standards demanded by these consumers is very low.

##### **4.6.2 Institutional consumer; (37 Military hospital kitchen section)**

As an institutional consumer, the cooking department prepares dishes for officers in the camp and patients on admission in the hospital and uses chili pepper on daily basis.

According to the officer in charge, they buy vegetables including chilies on contract basis from middlemen.

These middlemen source their chilies from surrounding towns and everywhere possible.

The military hospital has no preference in terms of quality or varieties but only consider the quantity.

They buy fresh chilies only from these middlemen; a bag weighing about 25kg cost 200 Ghana cedis.

The hospital currently have 3 middlemen who they have contracted to supply them vegetables including fresh chilies and delivered to them in bags using trucks.

##### **4.6.3 Interview with supermarket Retailers:**

According to the supply officers (who wants to remain anonymous) from these two supermarkets, they do not rely on smallholder farmers because their supplies are not regular and cannot also meet the volumes they demand.

They however get few supplies from an agent named Eden tree limited who sources the chilies for them.

These supermarkets source their chilies and other vegetables mostly from South Africa and Egypt due to the reliability of supplies from these countries.

Observations in their shelves indicates that a 130gram pack of fresh chilies was being sold for GH¢ 2.00

The quality requirements are the same as those for exports which is fresh, disease free and without defects.

According to him, they would like to buy from the smallholder farmers because it would be cheaper to do that but if only farmers can meet the volumes and frequency of demands.

#### 4.7 Chain upgrading strategies:

##### 4.7.1 Marketing opportunities available to smallholder farmers:

From the research findings through interviews and observations, market opportunities exist for smallholder farmers to take advantage of. Marketing options available are the shopping malls, supermarkets, institutional consumers and even the export market according to respondent's answers. The only value addition activity by farmers is the production activity.

Upgrading strategies smallholder farmers suggested is expansion of the land area under cultivation. Exporters suggested improving on the frequency of supplies by the farmers. Improvement in the area of production thus good agricultural practices (GAP) was also mentioned

Information of chili requirements of these two potential actors are presented in table 13.

**Table 13: chili pepper requirement of supermarket retailer and an institutional consumer**

Chili pepper requirements	Institutional consumer	Supermarket
Varieties preferred	No preference	MI2, Legion 18, Bird eye chili and local varieties
Where they buy from	Middlemen	Middlemen and imported from South Africa and Egypt
Quantity	50kg/week	67.8kg/week
Frequency of delivery	weekly	weekly
Method of delivery	Through trucks	Trucks/vans
Method of payment	Suppliers paid through banks at end of the month	Suppliers paid through bank upon delivery

Source: Interview results

## 5 Discussion

This chapter discusses the findings from the interviews conducted and observations in the study area that has been presented in chapter four.

### 5.1 Actors and their roles in the chili pepper chain

The chili pepper value chain in Kpando torkor irrigation scheme is composed of two chains; formal or export market based chain and informal or local market based chain.

Actors involved in the chains are input suppliers, smallholders' farmers, market women (traders), agents, exporters, international retailers and consumers.

The export market based chain is well established and it comprises of input suppliers, smallholder farmers, agents who play a very key role in the chain but seems not to be recognized the exporter who is the lead firm, and the international retailer. This is in line with the findings of Roduner, (2007) who classify value chain as an analytical and operational model where the product is hardly ever consumed at the place of production before transformed.

The chain is a very lean and short one and therefore very competitive chain. The actors support each other with information flow regarding product quality requirements and supplies and to some extent investments. There is therefore relationship among the actors, this confirms the statement by Kaplinsky, 2000; KIT et al, 2006 that the actors in a value chain invest in time, effort and money and build relationships among themselves to reach a common goal of satisfying their consumer needs in order to increase their profits (Kaplinsky, 2000; KIT et. al, 2006).

The relationship though is not formal between actors down the chain; thus from the input dealers to the exporters level the relationship is based on mutual trust but relationship between some of the exporters and the international retailers is more formal and stronger with written contracts.

The local market based chain which is also lean and short is not that competitive. This is because its supplies are mainly the export market rejects. This chain is also informal because though there is a strong relationship between the actors there is no commitment to comply with any rules. In both chains there is also strong co-operation among smallholder farmers in supplying inputs, producing and selling, this confirms what literature says about horizontal integration in chapter two of this paper.

### 5.2 Market Institutions and chain relationships

The chili pepper chain has a strong market institution. This was observed during visits and interview with the agricultural extension agent and supporters of the chain. The role of market institutions are visible in the export market based chain where there are laid down rules, norms, good agricultural practices (GAP), standards of the quality of products are all well laid down and known to actors in the chain. The agents in the chain play a link role in information flow to the other actors in the chain. This has created good interactions among actors within the chain and also reduces uncertainty. This confirms the statement by Woodhill (2013) that market institutions sets how the game is to be played.

A Director at Ghana Export Promotion Authority (GEPA) which is the apex regulatory body under which all the actors and supporters in the chain operates confirms findings on the marketing institutions and relations.

The local market based chain however has a weak market institution because it has no serious regulations to follow, has few rules, ad hoc arrangements and few services. This can be attributed to the fact that the crop (chili pepper) production in Ghana and KTIS in particular is focusing mainly on the export market chain therefore little or no attention is given to the local chain.

Interestingly information flow within both chains is very encouraging. According to Mr. Po; one of the main exporters who buy from the farmers, he relays information about quality requirements, volumes of product and any information that is important from the international retailers to the producers. This the other exporters also confirmed. It is even much better among the actors in the local chain since they all are in the same community with the consumers therefore information flow or feedback very strong.

### 5.3 Challenges of the chili pepper value chain

The chain has a number of challenges confronting the actors, especially the smallholder farmers. These challenges can be categorised into Financial, Technical, Production, and Marketing challenges.

**Financial challenges:** The major challenges faced by the smallholder farmer are financial problems. As stated by one farmer, *“our biggest problem is high cost of inputs and production costs, and unavailability of financial assistance. Since most of us are rural dwellers without capital to invest in the business”*. This problem is compounded by the fact that they are not getting financial assistance from the financial institutions in the form of loans because it is on record that they defaulted in paying back previous loan from the banks as confirmed by a loan officer of one financial institution. The high cost of inputs is also due to the depreciation of the cedi (Ghana's currency) to the dollar and the euro in the currency market; which effects imported inputs.

**Technical challenges:** There is also poor irrigation infrastructure which does not allow all year round production; irrigation facilities are not up to the required standards, larger portions of the lands are still undeveloped and pose a problem to production activities.

The agricultural extension officer in the district and the director of GEPA agreed that farmers as individuals are poor and cannot be engage in this kind of facilities, but collectively as a group they can.

**Production challenges:** The land area size per farmer for cultivation is too small average of 2 acres per farmer's landholding, irregular and low production volumes and supply to meet the demands of buyers. Sometimes they also have problems getting access to the seed since it is imported F1 seeds. There has also been incidence of disease in some farms; anthracnose and nematode recorded.

**Marketing challenges:** One female farmer also commented during the group discussion that, *“I wish the leadership of the co-operative will involve every farmer in the negotiation of prices with the exporters since the price they agree on is not always fair”*, indicating that some farmers are not satisfied with the pricing or there is lack of transparency in price

negotiations. These calls for stronger co-ordination of the production group as well as improve on their transparency on the part of leadership of the group.

Over-reliance on the export market has made them to lose focus on the huge marketing opportunities in Ghana for the chili pepper and its processed products that they can take advantage of.

#### **5.4 Opportunities and market options**

In response to questions about marketing opportunities and options, all actors attested to the fact that there are more opportunities to market chili pepper both domestically and internationally.

Smallholder farmers currently only wish to increase volumes of production for the export market but during interviews with the potential actors like the supermarkets and institutional consumers, they all express willingness to purchase chili products from the KTIS farmers if only they are assured of regular supply. As for the travelling traders, they are not buying from the KTIS farmers because the variety being currently produced is of premium quality and the price is too high for them. These travelling traders are supplying to restaurants and institutional consumers who are only concerned with volumes and frequency of supply and not quality. It is therefore an area the smallholder farmers must consider as an option.

With regards to the supermarkets and shopping malls, the customers are mostly the high income consumers. They therefore consider quality of the products and frequency as well as volumes requirements of the chili supplied. Comparing literature on marketing mix which talks about the four Ps (Product, Price, Promotion and Place) with results of marketing activity (table 10).

#### **5.5 Chain Upgrading for the maximization of benefits in the chain**

Results from interviews and group discussions with farmers in the area of upgrading brought about little variations in how to upgrade. For farmers to upgrade and integrate into the chain, they must be in more activities in the chain or be more involved in the management of the chain according to KIT and IIRR (2006). But in this chain, farmers are only playing the role of a chain actor through the production of the chili pepper fruit. They are not involved in sorting, grading or packaging.

The farmers rely on the exporters and agents in harvesting and post-harvesting activities; Exporters bring their own boxes and scales to the farms to weigh the products (scales can be adjusted to favor exporter and this can be a source of cheating).

The scheme manager of KTIS proposed development of more irrigable areas to increase production. Farmers agreed to the need to increase land area for the cultivation of the chilies, to produce more than once every year and to also source for potential markets. These are all means of vertical and horizontal integration into the chain.

Looking at the value shares of the actors in both chains, if producers can add value to the products through processing into other forms of chili products for sale, they can maximize the benefits of their chilies since little cost is involved in the processing.

This compares to literature on upgrading by Simon et al (2010) who said upgrading is about acquiring capabilities and accessing new market segments through participation in particular

chains. It also talks about upgrading which can be put into product upgrading, volume upgrading, process upgrading and functional upgrading which will lead to vertical integration.

### 5.6 Value shares of the actors in the chain

The research findings on value shares of the export market based chain reveals that contrary to the perception by farmers that exporters make a lot of profit from their produce and that they are not getting a fair share is not an absolute truth as the value share and profit of the various actors suggest. The values indicate a fair share of the value added by each other. The value shares of the exporters are relatively higher than the smallholder farmers. The smallholder farmers have 20% value share, the exporters have 31.30% while the agents get an unknown share (no records available and no actor was able to give a figure) from either the farmers or the exporters based on negotiations and agreement, the remaining percentage goes to the international retailer.

During interviews and observations made by the researcher on the exporters, they all confirmed that the supply and export of chili pepper is dependent or related to other vegetables which are mostly Asian vegetables. They reported that international retailers request for these Asian vegetables alongside the chili pepper so they make most of their profit from the other vegetables which include ravaya, turia, long marrow, tinda, green pawpaw etc. Farmers and agents do not incur any cost (value addition) after harvest such as transport and other charges unlike the exporters and that accounts for their low value shares in the chain.

As Kaplinsky and Morris (2001) explained; in determining the distribution of value shares among actors in the chain; one can identify who benefited in its participation in the chain and which actors will benefit more when support is provided. They added that, 'this is particularly important in the context of developing countries, given concerns that the poor in particular are vulnerable to the process of globalization.

Based on this assertion, smallholder farmers stand to gain the most when they are able to upgrade or improve in their functions.

In the second chain which is the local market based chain, the women traders have the largest value share of 57% followed by retailers with 33% and the smallholder farmers having 10%.

It must however be emphasized that this local market based chain handles only 20% of the total volume of chili pepper produced. This 20% volume is made up of the export rejects. But this high value share is also due to the fact that the market women add value to the product by processing it into other forms before selling, and this value addition (processing) is done at a very minimal cost to the actor, since it involves drying and grinding into powder with no external labour input.

These findings are supported by that of KIT and IIRR (2008) who found that farmers received the highest value share among actors of the chain. This also explains the importance of chain integration as it improves chain performance and profit margin.

### 5.7 Gender perspective of the chain

There is a gender perspective to both chains; the export market based chain is dominated by males. It is an all-male affair at the agents and exporters level. Of all the four exporters and two agents operating within the scheme, none of them is female there are no restrictions on entry of females into this sector but the cultural norms and society in Ghana unconsciously makes some jobs male dominated.

But at the producer level of the chain, there is fairly a balance in gender distribution. There was a 60% male and 40% female producers who supplies chili pepper to these agents and exporters. The reason is that women have major activities or role to play at home and the local market than in a commercial activity.

The women however dominate in the local market based chain because wholesaling, processing and retailing of food stuff with this community are mainly the work of woman. Placing gender in the context of intra-household bargaining and of broader social processes dimensions as stated by (Wyrod, 2008) that accounts for the different roles played by males and females in both chains in the community.

### 5.8 Sustainability aspects in the chain

**Environment** -Farmers producing within the irrigation scheme are partially conscious of the land degradation and pollution caused by their activities. The awareness creation has been done by the supporters in the chains during technical training and workshops organized. The farms look clean at some parts due to the quality standards demanded by exporters before chilies are harvested and bought. There was however few improperly disposed agro-chemical containers observed which can caused environmental hazards in the future if not checked

**People** -The chili pepper chain have really created jobs in the community for the people and this fulfills the mandate of the government of Ghana (GOG) in the aspect of job creation. Jobs have been created at each level of the chain. One can find shops selling agro-chemical and other farm inputs, families renting lands to produce chilies, young men and women employed as laborers and the women engaged in processing and trading of chili pepper.

**Profit** - All actors make profit from their activities. The chain has created an economic activity for all actors and has brought about economic returns to them.

This agrees the concept of the value chains of a commodity in literature.

## 5.9 SWOT analysis

Table 14 shows analysis of the strengths, weaknesses, opportunities and threats of the smallholder farmers in the chain operating on KTIS lands.

**Table 14: SWOT analysis**

Internal	
Strengths	Weaknesses
Institutional/Governance	
<ul style="list-style-type: none"> <li>➤ Government provision of infrastructure.</li> <li>➤ Irrigation facility and good source of water for irrigation.</li> <li>➤ Good information flow between actors.</li> <li>➤ Subsidy on inputs (fertilizer) available.</li> <li>➤ Farmers very experienced in chili pepper production.</li> <li>➤ Farmers are able to produce to meet markets quality requirements.</li> <li>➤ Availability of good extension/technical services.</li> <li>➤ Good agricultural practices.</li> <li>➤ Easy access to inputs through input dealers, GIDA and MOFA.</li> <li>➤ Available land for future acreage expansion in production.</li> <li>➤ Availability of strong market institutions</li> <li>➤ Good soil and climatic conditions for chili pepper production.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Weak co-operation among producers/farmers.</li> <li>➤ Absence of cooling/storage and processing facilities.</li> <li>➤ No value addition done by farmers after harvesting.</li> <li>➤ Selling of only one product which poses a market risk of relying on a single product.</li> <li>➤ Inconsistency in production and supply to buyers resulting in market losses.</li> <li>➤ Absence of scales for measurement and standardized measures.</li> <li>➤ Ageing farmers</li> <li>➤ Price fluctuations.</li> <li>➤ Poor record keeping.</li> <li>➤ Poor financial management.</li> <li>➤ Many inactive members.</li> </ul>
External	
Opportunities	Threats
<ul style="list-style-type: none"> <li>➤ High demand for the chili pepper both locally and internationally</li> <li>➤ Springing up of new markets for the chilies in the local market.</li> <li>➤ Availability of supporters to give technical and financial assistance.</li> <li>➤ Availability of ready markets.</li> <li>➤ Availability of high yielding varieties.</li> <li>➤ Availability of land and water all year round.</li> </ul>	<ul style="list-style-type: none"> <li>➤ High cost of production</li> <li>➤ High cost of inputs</li> <li>➤ High cost of F1 seed</li> <li>➤ High interest rates charged by financial institutions</li> <li>➤ Inadequate financial assistance</li> <li>➤ Monopolization of markets by wholesalers in the local market based chains.</li> <li>➤ High interest rates charged by financial institutions.</li> <li>➤ High cost of labour and inputs.</li> <li>➤ Low income</li> </ul>

Source: Interview

## 6 Conclusion and Recommendations

### 6.1 Conclusion

The chili pepper value chain of KTIS smallholder farmers consist of two short chains; export market based and local market based chains.

The export market based chain is not fully developed but is well established with strong market institutions and relationships. The actors in the chain are input suppliers, the smallholder farmers, exporters and the international retailers. The lead firm (dominant actors) in the chain is the exporters.

The local market based chain is also a lean and short chain comprising smallholder farmers, women traders and retailers as well as input dealers as actors in the chain. The lead firm in this chain is the market women. This chain is not well established and has a weak market institution ad hoc rules and regulations but strong market relationship among the actors.

In both chains, production is the only value addition activity undertaken by smallholder farmer's thus vertical integration.

In the export market based chain; the value shares among the actors is fairly balanced considering the value addition activity of the actors. The exporters does more value addition than the other actors and therefore have the higher value shares the farmers.

The agents though appear to be like actors, they are actually playing the role of supporters since they neither own the products nor add value to it.

The challenges confronting smallholder farmers in the chain are small land holdings, irregular production and supply of chilies to buyers, poor infrastructural development, high production cost and marketing problems.

Marketing opportunities exist in the chain for smallholder farmers. Locally; Institutional consumers like the hospitals, schools and other organizations as well as shopping malls and supermarkets whose customers are high income consumers are willing to buy from farmers if only they can be guaranteed regular supplies of the products. Travelling traders or middlemen and restaurants are other the potential buyers. For the export market, exporters are demanding more volumes which smallholder farmers have the potential to produce and supply.

The KTIS and the chili pepper chain have brought social and economic benefits to the people living in the community through job creation and income generation for the people.

In summary, there is a huge marketing prospects or opportunities in the chain for the smallholder farmers but so far they have under-utilised that opportunity through few activities (production only) in the chain as chain actors. Farmers therefore stand to benefit fully from the chili pepper chain if they will upgrade and further integrate in the chain.

## 6.2 Recommendations

For the smallholder farmers to benefit fully from the chili pepper value chain, the following actions are recommended in addressing the weaknesses and threats in the chain.

### **For smallholder's farmers:**

- i. Members of the farmer's co-operation need strengthening through re-organisation.
- ii. The farmers' co-operative must collectively invest in the development of irrigable lands, storage facilities and buy own measuring scales.
- iii. Farmers' co-operative must approach potential buyers identified and diversify into production of other chili pepper varieties that the buyers demand.
- iv. They must also increase production cycle (crop intensity) to more than once a year to be consistent in supply.
- v. Smallholder farmers as a co-operative must engaged in value adding activities such as processing some of the chili pepper into dry and powdered forms to increase their value share in the local market based chain.
- vi. Farmers must seek for training through the co-operative group and supporters of the chain to improve on record keeping, entrepreneurship and good financial management.

### **For GIDA:**

- i. Ghana irrigation development authority must assist farmers to improve the irrigation infrastructures and also develop more irrigable areas to increase cultivation areas for farmers and make them available through private financing. GIDA can do this by encouraging private investors into the project through public private partnership agreements currently being promoted by the government of Ghana.
- ii. Assist farmers undergo training on financial management, record keeping, negotiations skills and marketing to improve the market competitiveness of farmers operating on the scheme.
- iii. The post-harvest and marketing unit of GIDA also needs to be more involved in the post-harvest activities of farmers in order to appreciate the challenges and be able to give practical solutions to farmers marketing problems.

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## Appendices

### Appendix 1 Estimated crop budget for smallholder farmers

Crop Budget estimate for KTIS Smallholder farmers on a one hectare(1ha) plot					
EXPENSES					
No.	ITEM	UNIT	QUANTITY	UNIT PRICE GH¢	VALUE GH¢
<b>1. INPUTS</b>	Seed	Grams	250	6.30	1575.00
	Fertilizers (NPK)	Bags	5	95.00	475.00
	Sulphate of ammonia	Bags	15	70.00	1050.00
	Insecticides	Litres	3	11.00	33.00
	Fungicide	Litres	8	20.00	160.00
<b>TOTAL</b>					<b>3,293.00</b>
<b>2. LAND PREPARATION</b>					
	ploughing	man-day	1	2250.00	2250.00
	harrowing	man-day	2	1125.00	2250.00
	nursery & Management	man-day	1	80.00	80.00
	transplanting	man-day	1	300.00	300.00
<b>TOTAL</b>					<b>4880.00</b>
<b>3. LABOUR COST</b>					
	Spraying	man-day	3	24.00	60.00
	Fertilization	man-day	6	100.00	600.00
	Weeding	man-day	5	337.50	1687.50
	Harvesting	box	3	3170.00	9510.00
<b>TOTAL</b>					<b>11,857.50</b>
<b>4. OTHER COSTS</b>					
	ISC	man-day	1	1700.00	1700.00
	Land rent	man-day	1	37.50	37.50
<b>TOTAL</b>					<b>1737.50</b>
<b>GRAND TOTAL</b>					<b>21,768.00</b>
<b>REVENUE</b>	ITEM	UNIT	QTY (6kg/box)	PRICE PER BOX (Gh¢)	VALUE (Gh¢)
	Yield	Box	3,170	12.00	<b>38,040.00</b>
<b>PROFIT</b>					<b>16,272.00</b>

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## Appendix 2 Interview checklist for chain actors

### For smallholder farmers

Name of respondent:

Age:

Date:

Educational level:

Gender:

#### **Production:**

1. What type (variety) of chili pepper are farmers producing?
2. Production/farming system used.
3. Number of years and experience in chili pepper production.
4. Where do they get the inputs from?
5. What inputs do they use?
6. What is the farmer's cost per production?
7. How do farmers finance production operations (sources of finance)
8. Are there any service providers in your environment from which you can have any kind of support?
9. How many times do you produce in a year?
10. Do you ever participate in an extension/training programmes?
11. What are your biggest problems concerning chili production?

#### **Postharvest activities:**

12. What postharvest activities do farmers undertake after production?
13. In what form do farmers sell the chili (packaging, weight)?
14. What are the requirements buyers demand in terms of quality and volume?

#### **Marketing**

15. Where do farmers sell the chili pepper?
16. Who are the customers?
17. What are their customers' requirements in terms of grade (quality), volume and frequency of supply?
18. How do farmers decide on prices of the chili pepper they sell?
19. What is the price of chili pepper?
20. What Market options are available for smallholder farmers?
21. What Market options do smallholder farmers prefer?
22. How do they access marketing information?

### **Checklist for Exporters**

1. What kind of chili products do you export?
2. Do you export any other products apart from chili?
4. Are you a member of any trade association?
5. Where do you get your products from?
6. At what price do you buy from your suppliers?
6. Do you always buy from the same suppliers?
7. What relationship or agreement do you have with your suppliers?
8. Do you have special requirements in terms of quality, variety and volume?
9. In what form do you export your chilies?
10. Where and to whom do you sell chili?
11. What transactional cost do you incur?
12. How do you grade your chilies?
13. What are the selling prices of the different grades?
14. Who and how are prices determine?

### **Checklist for Agents**

1. What is your specific role in the chili pepper chain?
2. What is your specific relationship with the actors (producers and exporters)?
3. What kind of chili pepper products do you deal in?
4. Are you a member of any trade association?
5. Where do you get your products from?
6. At what price do you buy from your suppliers?
6. Do you always buy from the same suppliers?
7. What relationship or agreement do you have with your suppliers?
8. Do you have special requirements?
10. Where and to whom do you sell chili?
11. What transactional cost do you incur?
12. How do you grade your chilies?
13. What are the selling prices of the different grades?

### **Checklist for chili pepper processors:**

#### **Processing activities**

1. What is the source of their produce?
2. At what price do processors buy chili pepper from farmers?
3. What are the processor's preferences of the chili pepper's quality and quantity?
4. What processing activities are done on the chili pepper?
5. What are the sources of finance for the processing operations?
6. What processing costs do processors incur?

**Marketing**

7. At what price do processors sell the products?
8. To whom (customers) do processors sell to?
9. What challenges do you face in processing and marketing products?
10. What Market options are available for processors?
11. What Market options do processors prefer?
12. How do they access marketing information?

**Checklist for wholesalers and retailers**

1. What kind of chili products do you sell?
2. Are you a member of a trade association?
3. Where do you get your products from (suppliers)?
4. Do you always buy from the same suppliers?
5. At what price do you buy your chilies?
6. Do you have any relationship or agreement with your suppliers?
7. Do you have special requirements in terms of quality, volumes and frequency of supply?
8. What is the transport cost?
9. Any other cost apart from transport?
10. How is chili graded?
11. What are the prices for the different grades?
12. How do you arrive at a price with your supplier?

### Appendix 3 Checklist for informants

#### For informants:

Name of respondent:.....

Position.....

Date:.....

Organisation:

#### **Production:**

1. What type (variety) of chili pepper are farmers producing?
2. Production/farming system used.
3. Number of years and experience in chili pepper production.
4. Where do they get the inputs from?
5. What inputs do they use?
6. What is the farmer's cost per production?
7. How do farmers finance production operations (sources of finance?)
8. Are there any service providers in your environment from which you can have any kind of support?
9. How many times do you produce in a year?
10. Do you ever participate in an extension/training programmes?
11. What are your biggest problems concerning chili production?

#### **Post-harvest activities:**

12. What post-harvest activities do farmers undertake after production?
13. In what form do farmers sell the chili (packaging, weight)?
14. What are the requirements buyers demand in terms of quality and volume?

#### **Marketing**

15. Where do farmers sell the chili pepper?
16. Who are the customers?
17. What are their customers' requirements in terms of grade (quality), volume and frequency of supply?
18. How do farmers decide on prices of the chili pepper they sell?
19. What is the price of chili pepper?
20. What Market options are available for smallholder farmers?
21. What Market options do smallholder farmers prefer?
22. How do they access marketing information?

## Appendix 4 Checklist for chain supporters

### Basic Information

1. Agency:
2. Address:
3. Name of correspondents:
4. Gender :
5. Services/support offered
6. What kind of services are you offering to the farmer or other actor?
7. How are these services provided?
8. What are the challenges that you have faced in implementing your services to the Farmers or other actors in the chain?

## **Appendix 5 checklist for Future/potential actors**

### **Checklist for travelling traders/middlemen**

1. Where do you buy your chili pepper?
2. What type (varieties) of chili pepper do you deal in?
3. Are you a member of any trade association?
4. At what price do you buy from your suppliers?
5. Do you always buy from the same suppliers?
6. What relationship or agreement do you have with your suppliers?
7. Do you have special requirements?
8. Where and to whom do you sell chili?
9. What transactional cost do you incur?
10. How do you grade your chilies?
11. What are the selling prices of the different grades?

### **Consumers interview checklist**

1. What chili pepper products you prefer?
2. Who are their present suppliers?
3. Where do you prefer to buy your chili pepper?
4. What quantities? How often?
5. Method of delivery/channel they prefer?
6. What is the method of payment?

## Appendix 6 the business canvass model of KTIS smallholder farmers

<b>KEY PARTNERS</b> <div>➤ Input dealers (GAIDA)</div> <div>➤ GIDA</div> <div>➤ MOFA</div> <div>➤ Land owners</div> <div>➤ Transport owners</div> <div>➤ Exporters (GAVEX)</div> <div>➤ Agents</div> <div>➤ Market women</div> <div>➤ Donor organisations (GIZ)</div> <div>Potential partners:</div> <div>➤ Shopping malls groceries,</div> <div>➤ Supermarkets,</div> <div>➤ Institutional consumers</div>	<b>KEY ACTIVITIES</b> <div>➤ Input mobilisation</div> <div>➤ Production activities</div> <div>➤ Supply/sales of chili pepper and other crop products.</div> <div>➤ Transport of chilies to customers at market places and institutions</div>	<b>VALUE PROPOSITION</b> <div>➤ Produce and supply customers with quality chili pepper.</div> <div>➤ Meet all current and future customers' demands in terms of volume, frequency and quality.</div> <div>➤ Diversify by producing other varieties of chilies.</div> <div>➤ Increase volumes produced by investing in irrigable land development and improving in production techniques.</div> <div>➤ By improving in marketing and customer relations.</div>	<b>CUSTOMER RELATIONSHIPS</b> Currently; mutual relationship between farmers and one main customer (an exporter).  Future: Build new relationship with potential customers by meeting frequency and volumes of their demands.	<b>CUSTOMER SEGMENTS</b> Current customers: <div>➤ Exporters</div> <div>➤ agents</div> <div>➤ Market women</div> Potential customers: <div>➤ Travelling traders</div> <div>➤ supermarkets</div> <div>➤ Institutional consumers</div> <div>➤ Restaurants</div>
	<b>KEY RESOURCES</b> <div>➤ Land</div> <div>➤ Water</div> <div>➤ Inputs(seeds, Agro-chemicals)</div> <div>➤ Finance</div> <div>➤ Labour</div> <div>➤ Technical assistance</div> <div>➤ Transport services</div>		<b>CHANNELS</b> Currently: Sales is at farm gates through physical contacts and mobile phone communications. New channels: <div>➤ Improve sales channels through advertising, promotion</div> <div>➤ Building a sustainable relationship with other actors and institutional consumers.</div> <div>➤ Break into the supermarkets.</div>	
<b>COST STRUCTURE</b> Currently: Input costs Labour costs  Future: Transport cost Product promotion cost		<b>REVENUE STREAMS</b> Sales of fresh green chilies, Sales of over-matured chilies in the local market Sales of other products (maize and okra)		

Tractor services                      communication cost	Future: Sales of other varieties of chilies Sales of chili products Sales of high income horticultural crops
<b>Social &amp; Environmental Cost:</b> Environmental pollution from improper agro-chemical waste disposal by farmers.	<b>Social &amp; Environmental Benefit</b> Employment creation for rural dwellers Income generation for rural dwellers Poverty reduction Improved standard of living for the farmers

