

**MARKETING EFFICIENCY OF BEEF CATTLE VALUE CHAIN IN LONGIDO  
AND MONDULI DISTRICTS IN TANZANIA**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE  
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AGRICULTURAL ECONOMICS OF SOKOINE UNIVERSITY OF  
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## ABSTRACT

This study was conducted to analyse beef cattle value chains so as to identify potential areas for intervention in order to improve livestock keepers' access to markets in Longido and Monduli districts in Tanzania. The study was a cross sectional design. Data were collected from 191 beef cattle value chains actors using individuals and key informant interviews. The data collected were summarized using Statistical Package for Social Science (SPSS) and Microsoft Excel. Sub-sector mapping analysis was used to map beef cattle value chains. Results indicate that there were a number of actors i.e. livestock keepers, middlemen, traders, butcherers, hotels/supermarkets and final consumers. Profits along the beef cattle value chains were computed. Results indicate variations in GM whereby the butcherers who purchased live cattle from primary markets or secondary markets received the highest GM of 198 500 TShs/head of cattle weighing 200kg followed by butcherers who purchased carcass from slaughter houses with GM of 130 500 TShs/cattle and lastly the farmers with GM of TShs 272 258 per head. The regression analysis model was used to analyse the determinants of beef cattle farmers' profitability. The findings show that educational level and accesses to veterinary services were significant at  $P < 0.01$  while experience and access to market information were significant at  $P < 0.05$ . Marketing efficiency in beef cattle sub-sector decreases as the marketing costs and/or margins of intermediaries in the marketing channels increases and vice versa. In conclusion, the beef cattle sub-sector is faced with marketing challenges that hinder the development of a sustainable and profitable value chain. The study recommends on provision of appropriate education and training, improving access and availability of market information in order to reduce the challenges for establishing a sustainable value chain in the study area.

**DECLARATION**

I, Staricko Nyikwa Meshack, do hereby declare to the Senate of Sokoine University of Agriculture, that this dissertation is my original work done within the period of registration and that it has neither been submitted nor being concurrently submitted in any other institution.

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**DEDICATION**

I dedicate this work to my family for their sacrifice and encouragement during my study.

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## LIST OF ABBREVIATIONS AND SYMBOLS

BCR or B/C	Benefit Cost Ratio
CP	Consumer Price
EPINAV	Enhancing Pro-Poor Innovation in Natural Resources and Agricultural Value Chains
FAO	Food and Agriculture Organization
FAOSTAT	Food and Agriculture Organization Statistics
FP	Farmer Price
GCC	Global Commodity Chain
GDP	Gross Domestic Product
GM	Gross Margin
GMA	Gross Margin Analysis
GVC	Global Value Chains
IFPRI	International Food Policy Research Institute
i.e.	<i>Id est</i> (That is)
ILO	International Labour Organization
ILRI	International Livestock Research Institute
IRR	Internal Rate of Return
Kg	Kilogram
Km <sup>2</sup>	Kilometer square
LEISA	Low External Input and Sustainable Agriculture.
MC	Marketing Cost
MDC	Monduli District Council
MFI	Micro Finance Institutions

MLFD	Ministry of Livestock and Fisheries Development
MM	Marketing Margin
MMA	Match Maker Associates
MME	Modified Measures of Marketing Efficiency
MT	Metric Tons
n	Number
NBS	National Bureau of Statistics
NGO	Non Government Organization
NMM	Net Marketing Margin
OLS	Ordinary Least Square
PZCT	Profit Zone Consultants Trainers
ROI	Return on Investment
SACCOS	Saving and Credit Cooperatives Societies
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SNAL	Sokoine National Agricultural Library
SNV	Stichting Nederlandse Vrijwilligers
SPSS	Statistical Package for Social Sciences
SUA	Sokoine University of Agriculture
SURUDE	Sustainable Rural Development
TGMM	Total Gross Marketing Margin
TIB	Tanzania Investment Bank
TMC	Total Marketing Cost
TR	Total Revenue
TShs	Tanzanian Shillings
TVC	Total Variable Costs

UNIDO	United Nations Industrial Development Organization
URT	United Republic of Tanzania
USAID	United States Agency for International Development
VIF	Variance Inflation Factor
%	Percentage
<	Less than

## CHAPTER ONE

### 1.0 INTRODUCTION

#### 1.1 Beef Cattle Sub- Sector

Livestock systems represent a potential pathway out of poverty for many smallholders in the developing world. The majority of the world's rural poor, and a significant proportion of the urban poor, keep livestock and use them in a variety of ways that extend far beyond income generation (Shackleton *et al.*, 1999; Randolph *et al.*, 2000; Bayer *et al.*, 2004; Ruhangawebare, 2010). In many cases, livestock are a central component of smallholder risk management strategies (Bailey *et al.*, 1999).

Livestock keeping in Tanzania is basically a rural activity whereby more than 80 percent of households keeping livestock in the country live in rural areas (URT, 2014). Statistics show that out of 9 276 997 households in the country, 42 % (3 895 665 households) keeps at least one type of livestock. It is estimated that the cattle population in Tanzania is about 24.1 million (1 492 735 households) (URT, 2014).

In Tanzania, the beef cattle sub- sector contributes to household income, national income, employment and export earnings (MLFD, 2010; Zezza *et al.*, 2012). At the household level, livestock plays vital economic and social roles in the lives of pastoralists and agro-pastoralists. In addition, beef cattle fulfill an important function in coping with shocks, accumulating wealth, and serving as a store of value in the absence of formal financial institutions and other missing markets (Negassa *et al.*, 2011). Furthermore, for pastoralists' livestock represents a sole means to support and sustain their livelihoods.

Distribution and possession of livestock are skewed with about 70% of the herd being concentrated in eight administrative regions that is: Shinyanga, Mwanza, Mara, Tabora, Singida, Arusha, Manyara and Dodoma (NBS, 2012) and 95 percent of the meat consumed in Tanzania comes from the traditional cattle (MMA, 2008). The traditional herds are mainly dominated by the Tanzania Shorthorn Zebu and Ankole breeds while, the Boran breed which is a specialized beef breed is kept mostly in government ranches (MLFD, 2006; MLFD, 2011). About 80% of these animals are kept in the agro-pastoral system while 14% are under the pastoral system (MLFD, 2006; Njombe and Msanga, 2009). The remaining 6% comes from commercial ranches.

Livestock keeping in Arusha region is the third most important sector in the economy of the region after agriculture and tourism (URT, 2014). The sector contributes about 20% of the region's GDP (Ibid, 2014). Moreover, both agriculture and livestock sectors employ more than 65% of the rural population (URT, 2014). The region has about 1.6 million cattle (Ibid, 2014).

Although there are a big number of cattle in Monduli and Longido districts the contribution of livestock to pastoral livelihoods is substantially limited due to market constriction (MLFD, 2010). Mlote *et al.* (2012) argued that among the factors which avert farmers to benefit from the potential markets of their beef animals are the inadequate market information for their livestock, especially the small holder resource-poor livestock producers. Other factors include inadequate marketing infrastructures (Mahabile *et al.*, 2002; Williams *et al.*, 2006; MLFD, 2006), prevalence of diseases like Tick Born diseases, Foot and Mouth Diseases (FMD) and Trypanosomiasis (Düvel and Stephanus, 2000; Mwacharo and Drucker, 2005; Chawatama *et al.*, 2005; NBS, 2012). Arusha region has about 14 slaughtering (houses) slabs, 161 cattle dips and 211 dams/ponds (URT,

2014). Studies by (Delgado *et al.*, 1999; Kinunda-Rutashobya, 2003; Kristensen *et al.*, 2004; SAGCOT, 2013) reveal that, there is a market for quality beef in Tanzania and this is evidenced by the importation of quality beef. However, for the quality beef production awareness to develop, it is a prerequisite that market should first be organized. A study by UNIDO (2012) affirmed that the production of quality and safe meat has the potential for import substitution and increased exports earning.

## **1.2 Problem Statement and Justification**

The importance of beef cattle industry in Tanzania cannot be overstated. Many studies including Brunso *et al.* (2005); Leather and Foster (2005); Aklilu (2008); Watson and van Binsbergen (2008); MLFD (2010); Abidoeye *et al.* (2011); Negassa *et al.* (2011); Alphonse and Alfenes (2012); Mlote *et al.* (2012); Zezza *et al.* (2012); Mlote *et al.* (2013); Kadigi *et al.* (2013); Nandonde *et al.* (2013) have shown that beef cattle industry has greater potential for improving the living standards of people through improved nutrition arising from meat consumption and incomes from sale of cattle and beef cattle products.

Despite the significance of beef cattle sub-sector in the country, there are a number of constraints livestock farmers are facing. Pica-ciamarra *et al.* (2011) and UNIDO (2012) affirmed that among of the constraints that face livestock farmers are inadequate marketing information, especially on prices, poorly developed marketing infrastructure, weak institutional, legal and regulatory framework and inadequate access to financial services for livestock rearing activities.

Notwithstanding, Tanzania ranks second in Africa in terms of cattle population after Ethiopia (FAOSTAT, 2014), the potential of this sub-sector is not clearly reflected in the

livelihood of the livestock keepers (MLFD, 2011). The main reason for this is a market constraint associated with the mismatch between livestock producers and cattle traders (Pica-ciamarra *et al.*, 2011; UNIDO, 2012). Livestock keepers complain on the accessibility of reliable markets while traders complain about the limited supply of quality cattle. Likewise, consumers (includes classic hotels, super- markets and final consumers) are not satisfied with the current type of beef sold in the markets (Mwilawa *et al.*, 2010). It is claimed that, more than 700 MT of quality beef is imported to Tanzania every year (SAGCOT, 2013). This importation is equivalent to 10 000 – 14 000 live animals which indicates the demand and potential market opportunities that can be exploited by local livestock keepers in the country.

Essentially, proper market arrangements influence chain actors to work towards improvements of beef cattle profitability. Studies by Delgado *et al.* (1999); Kinunda-Rutashobya (2003); Kristensen *et al.* (2004); Thornton (2010) and MLFD (2011) reveal that, there is an opportunity for sufficient market for livestock and livestock products in Tanzania. The rising population, income levels and urbanization across the developing world are driving demands for livestock and livestock products (SAGCOT, 2013). Improvement of access to market and the establishment of an efficient value chain are therefore essential in order to enhance livestock farmers to excel (Word Bank, 2008; UNIDO, 2012).

However, studies on beef cattle marketing in Tanzania such as Mlote *et al.* (2012); Nandonde *et al.* (2013) and Kadigi *et al.* (2013) have focused on the characterization of the beef supply chain; the influence of consumer preference and market access, linkage and opportunities for upgrading. In light of their findings there are no doubt that, little attention had given to the marketing efficiency of beef cattle channels.



In addition, limited studies conducted in the Northern zone of Tanzania i.e. Arusha, Manyara and Kilimanjaro to capture the profitability of beef cattle. Therefore, this study aimed at assessing the marketing efficiency of beef cattle value chain that needs improvements in order to increase access of the agro-pastoral and pastoral livestock keepers to the potential markets in Tanzania and East Africa in general.

### **1.3 The Objectives of the Study**

#### **1.3.1 The overall objective**

The overall objective of this study was to assess the marketing efficiency of the beef cattle value chain in Longido and Monduli districts so as to explore the available potential market opportunities for quality beef.

#### **1.3.2 Specific objectives**

The specific objectives were:

- i) To map the beef cattle value chain in Longido and Monduli districts;
- ii) To evaluate profit obtained by different actors along the chain;
- iii) To determine factors influencing beef cattle profitability for livestock keepers in the study area;
- iv) To determine the marketing efficiency in various beef cattle marketing chain segments;
- v) To identify the challenges faced by various actors in the beef cattle value chain in the study area.

### **1.4 Research Questions**

The study was guided by the following questions:

- i) Who are the key beef cattle value chain actors in Longido and Monduli Districts?

- ii) How is the value chain organized, coordinated and governed in the study area.
- iii) What are the profits of various actors along the value chain?
- iv) What are the main determinants of livestock keepers' profitability in Longido and Monduli districts?
- v) What is the marketing efficiency of various beef cattle channels and which is the most efficient channel?
- vi) What constrains the efficiency of beef cattle marketing systems in Longido and Monduli Districts?

### **1.5 Significance of the Study**

The study gives detailed information on how a beef value chain is currently functioning in Longido and Monduli districts. It points out factors that constrain beef cattle production and marketing system. The study also generates information that will guide beef cattle marketing development programs and areas for interventions that would improve efficiency of the beef cattle marketing system in the study districts and Tanzania in particular.

### **1.6 Organization of the Study**

This study is organized into five chapters. The first chapter provides a general background to the study, problem statement, study objectives and research questions. The second chapter gives a critical review of the literatures relevant to the study while the third chapter presents a detailed description of the study area and methodology employed. The fourth chapter presents results and discussion while the last chapter presents conclusion and recommendations drawn from the study findings.

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

#### 2.1 Definitions of Terms and Concepts

##### 2.1.1 Value chain concept

Three main approaches of the value chain have been uttered by Van de Berg *et al.* (2008). These include the *filière* approach (Raikes *et al.*, 2000); the Porter approach and the Global Commodity Chain (GCC) approach. On the *filière* concept of value chain analysis, emphasis is placed on the physical flow of goods from producers to consumers (Kaplinsky and Morris 2002; Essang, *et al.*, 2003). The Porter concept of value chain accentuates the competitive advantage of businesses which may not be tied to any actual physical transformation of product (Porter, 1985), while the GCC approach of Gereffi and Korzeniewicz (1994) centres on analysing the way in which firms and countries are integrated with the advance of globalization (Keane, 2008). From the foregoing, it can be said that value chain analysis may have very diverse application (Miehlbradt, 2007).

These different approaches in value chain analysis are useful depending on the goal of the analysis (Raikes *et al.*, 2000; Kaplinsky and Morris, 2001). That is, value chain begins from the producer and ends with the consumer; it is, therefore, a process of moving products from the point of production to the point of consumption with or without transformation (Webber and Labaste, 2010). Transport, storage, marketing, processing and retailing are the services that add value to the product at different points in the chain. The concept of 'value chain' was first used by Porter in 1980 as a tool for enhancing competitiveness of enterprises to attain a competitive edge. Porter defined the "value chain" as a representation of a firm's value-adding activities, based on its pricing strategy and cost structure. The concept has since been expanded to cater for larger units such as

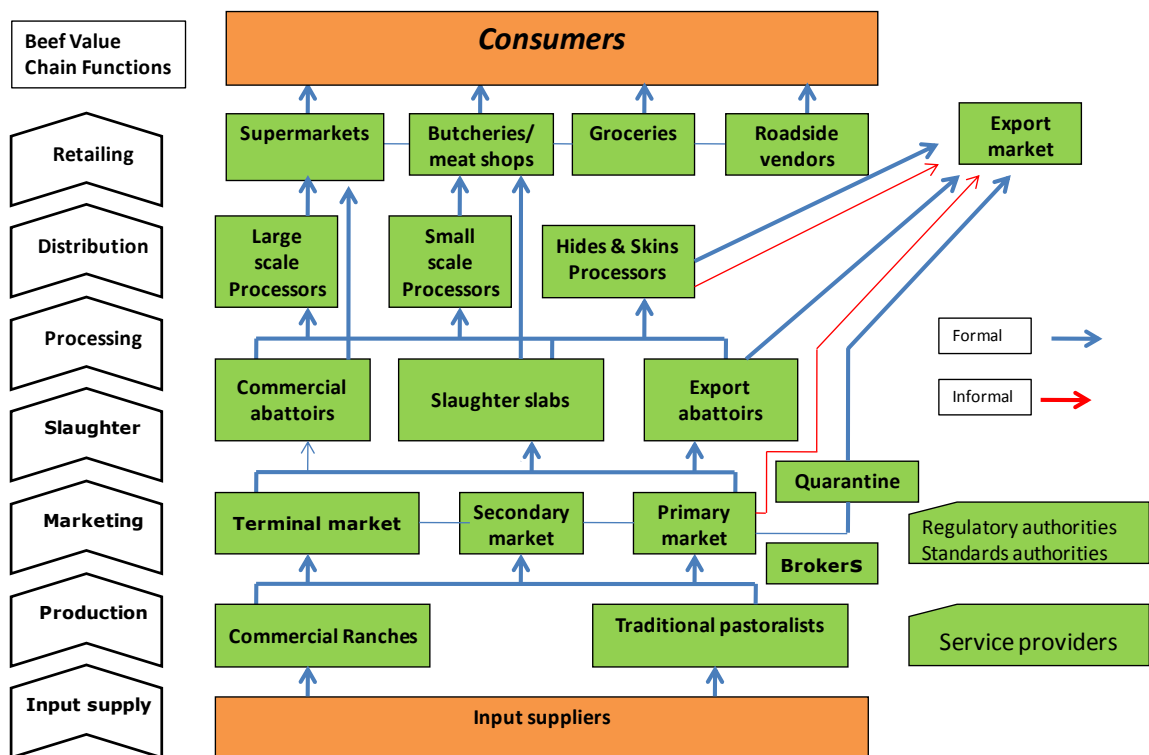
industry sub-sectors. Porter (1998) described the value chain as a system of independent activities, which are connected by linkages in a way in which, when one activity is performed affects the cost or effectiveness of other activities. Therefore, according to Porter (1985) linkages illustrate how a single activity affects other activities, thus serving as an important source of value adding.

On the other hand, Kaplinsky and Morris (2000) defined value chain as the “full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers and final disposal after use”. Major elements to be considered in the analysis of any value chain for a commodity include (a) actors along the chain, their functions and interrelations, (b) governance mechanisms for the chain, roles of actors e.g. Power relations and principal drivers of the chain functions, (c) impact of upgrading products, services and processes within the chain, and (d) distribution of benefits among actors within the chain (Kaplinsky, 2000; Kaplinsky and Morris, 2001; Schmitz, 2005). Thus, analysis of a value chain encompasses wider issues than supply chain which only shows the physical flow of goods or services from production to consumption through intermediate stages of value addition (Feller *et al.*, 2006).

Furthermore, other researchers for example Gibbons (2003) defined the term value chain as, “the set of interconnected, value-creating activities undertaken by an enterprise or group of enterprises to develop, produce, deliver and service a product or service”. Webber and Labaste (2010) advocated that value chains include all of the vertically linked, interdependent processes that generate value for the consumer, as well as horizontal linkages to other value chains that provide intermediate goods and services.

Central part of the above definition is the fact that a value chain involves many actors and a series of activities or functions which bring about transformation of goods and services that result in a product or service which has value to the user. In addition, the word “value and values” are used to show the nature of business relationships among interacting food business enterprises and these value based relationships are then called value chains.

Figure 1 shows the mapping of beef cattle value chain in Tanzania in its simplest form. It is merely a flow diagram (i.e. illustrating the core transactions of all beef cattle chain actors: beef value chains functions, service providers, input suppliers and the movement of products and by-products of beef from inception to the final consumers).



**Figure 1: Beef Cattle value chain in Tanzania**

Source: Kurwijila and Mtenga (2011)

### **2.1.2 Value chain analysis**

Value chain analysis involves critical assessment of a value chain to find out the value added, the stage it is added and at what cost with the aim of improving the chain to create more value hence, more benefits to the value chain participants (PZCT, 2010). The goal of value chain analysis is to improve efficiency and profitability in the chain by tackling challenges and taking advantage of opportunities (Webber and Labaste, 2010). Ultimately, value is added or created through innovation and intervention in production, processing and marketing. Practitioners contend that detailed analysis helps to challenge the assumptions that often underpin development interventions (PZCT, 2010). Therefore, to make the value chain process sound, the analysis should be market driven to ensure the proper amount of investment is done. According to Ansari and Bell (1997), the final aim of the value chain analysis is to manage costs so that the targeted margin will be achieved by the active members. This is achieved by managing customer demand, using technology effectively, avoiding waste through using the right processes, and by being conscious of the basic functions and principles of the dynamic value chain.

Furthermore, value chain analysis looks at all activities related to the production, transformation, processing and trading activities until the final consumption of a product, and the external factors which influence the market chain of a product (Belcher, 2005; Kusters *et al.*, 2006). It should therefore be noted that, when dealing with the concept of the value chain, the emphasis of concept is positioned in the physical flow of goods from producers to consumers. Therefore, different approaches in value chain analysis are beneficial depending on the objective of the analysis (Kaplinsky and Morris, 2001).

Thus, it follows that, as pointed out by Webber and Labaste (2010) there are many ways to analyse or evaluate a value chain. Analysis can originate from research of secondary

information such as government or industry data, interviews with industry participants as well as participatory market assessments and observations. For the market of beef cattle development to take place efficiently in rural areas there should be a good link between livestock keepers, traders and beef consumers. All of these are to be done with a sound value chain development (Schmitz, 2005).

### **2.1.3 Value chain governance**

Governance refers to the inter-firm relationships and institutional mechanisms through which non-market coordination of activities in the chain is achieved (Bair, 2008). Global Value Chains (GVC) analysis, the focus is on the rules, laws and regulations which are set to determine the functional and coordination in a value chain. It is also concerned with the existence of barriers of entry and the dominance of a certain agents (e.g. farmers, traders and consumers). Therefore, GVC relates to the contractual and informal relationship between the various actors in the chain which help business to operate efficiently and ultimately absorbs and disseminate knowledge, technology and competencies (WTO, 2012). According to Kaplinsky and Morris (2001) value chain governance includes four stages: setting rules; supporting other actors in the chain in order to be able to adhere to the rules; monitoring adherence to the rules; and imposing sanctions where rules are violated. Purnomo *et al.* (2009) argued that good value chain governance ensures that interactions between firms along the value chain are efficient and effective.

### **2.1.4 Value chain mapping**

The value chain map typifies the way in which beef cattle and their product flow from production areas in the study areas to end markets and how the overall beef cattle sector operates. It is there a visual depiction of the structure of the value chain and its main

characteristics or “a narrative description of the main characteristics of the value chain” (UNIDO, 2012).

According to Herr and Muzira (2009), mapping a chain means building a visual representation of the connections between businesses in value chains as well as other market players. It has very practical implications for a value chain initiative which are:

- i. It helps to illustrate and understand the process by which a product goes through several stages until it reaches the final customer (i.e. the core transactions). Knowing about the different levels in a value chain is also a precondition for identifying bottlenecks that are preventing the achievement of certain targets.
- ii. It serves as a way of identifying and categorizing key market players. Such value chain maps (or inventories) have been used in projects to invite market players to various workshops and events, arrange interview appointments with them or form steering groups comprising key market players.
- iii. Apart from businesses involved in core transactions, value chain maps can also illustrate which other supporting organizations (Government, NGOs, associations and other government partners are available, and which value chain levels they concentrate their services on.
- iv. If a value chain initiative intends to explore market opportunities, value chain maps can show up differently market channels through which products and services reach the final customer. These maps can also provide additional information on the relevance of individual market channels and the nature of relationships (e.g. number of competitors, size of market, number of workers, value chain governance, etc.)



- v. A value chain map can help companies investing in emerging markets to orient their activities, i.e. to identify important stakeholders, possible marketing or supply channels, competitors, weak links in the chain.

### **2.1.5 Market and marketing**

The term market has got a variety of meanings. Traditionally, market can be defined as a specific geographical area where buyers and sellers meet for exchange of goods and services (Larson, 1957; Andargachew, 1990; Schrimper, 2000; Zeberga, 2010). On the other hand, Kotler (2002) defined market as an institution within which the forces of demand and supply operate; sellers, and consumers are in constant communication, and there is a change of title to goods and/or services. Potential consumers make up a market, which is people with the desire and with the ability to buy a specific product (Jari, 2009). Markets therefore, are ways in which buyers and sellers conduct transactions resulting in mutual net gains that otherwise would not be possible (Hyman, 1989; Kotler, 1998).

It follows, therefore, that the market is an institutional and organizational arrangement that facilitate exchange of one thing for another (Zeberga, 2010). The most observable features of a market are its pricing and exchange processes. In this regard, a market is more than a physical place and entails mechanism or an institution through which buyers and sellers exchange information and transact. Conceptually, a market can be visualized as a process in which ownership of goods is transferred from sellers to buyers who may be final consumers or intermediaries.

Another basic concept that is closely related to market is marketing. This term came into use during the era of division of labour and specialization and became common with urbanization and industrialization over many years (Schrimper, 2000). It is a process that

involves planning and executing ideas from production, pricing, meeting people (customers) through distribution, and promotion of ideas, goods and services to create and maintain exchange that satisfy individuals, organization and meet societal objectives in the systematic situation of the global environment (Czinkota *et al.*, 1997). According to Tanner and Raymond (2014), marketing is also defined as an activity, set of institutions, and processes of creating, communicating, delivering, and exchanging goods and services that have value for customers, clients, partners, and society at large. It generates the strategy that underlies sales techniques, business communication, and business developments (Schrimper, 2000). Therefore, it is an integrated process through which companies build strong customer relationships and create value for their customers and for themselves. Mendoza (1995) also defined marketing as a system that comprises several interrelated structures along the production, distribution and consumption units underpinning the economic process.

Marketing is an important aspect of any livestock system. It provides the mechanism whereby pastoralists and agro-pastoralists exchange their livestock and livestock products for cash. The cash is used for acquiring goods and services, which they do not produce themselves, in order to satisfy a variety of needs, including food, clothing, medication, school fees, village taxes, purchase production inputs and supplies (Dovie *et al.*, 2006; Simela *et al.*, 2006)

Bateman (1976), in his review of marketing theory on the improvement of livelihood of farmers in Britain showed that, the low prices of agricultural produce were believed to be associated with inefficiencies in the distribution of agricultural produce from farmer to consumer. Due to these inefficiencies farmers experience inadequate bargaining power when selling their produce. This scenario is mainly a result of the tendency of

Smallholder farmers to rely on informal networks (traders, friends and relatives) for market information as a result of weak public information systems (FAO, 2004). Meulenberg (1986) argued that marketing of agricultural products needs a proper marketing management approach that focuses on the analysis of decisions related to the marketing mix (product, price, place of selling and promotion).

#### **2.1.5.1 Market chain and business support services**

According to Lundy *et al.* (2004) market chain is used to describe the numerous links that connect all the actors and transactions involved in the movement of agricultural goods from the farm to the consumer. Supporting these activities are services that enable the chain to work. Agricultural goods and product flow up the chain and the money flows down the chain. Supply chain literature as advocated by Simchi-Levi *et al.* (2003); Chung-Chi and Cheng-Han (2008) suggest that in such operations where coordination does not exist, it is inevitable to have inefficient supply and dissatisfied customers. Uncoordinated information from downstream to upstream of the supply chain has created a lot of wastages and losses for most of food processors.

The efficiency of the market chain is generally a factor of how well information flows among these actors. Given the many challenges of the market place, it is vital to suggest that a practical starting point in developing a marketing strategy is to assist chain actors to visualize their market chain from beginning to the end. Supporting these activities are services that enable the chain to operate. The efficiency of the market chain is generally a factor of how well information flows among these actors (Zeberga, 2010).

### **2.1.5.2 Marketing channels**

Marketing channels refers to a series of operations, which physically bring goods into the hands of the final consumer (Kohls and Uhl, 1990). Stern *et al.* (1996) defined marketing channels as sets of interdependent organizations involved in the process of making a product or service available for consumption or use”. Most frequently, a physical product transfer is involved but, sometimes an intermediate marketing institution may take title to goods without actually handling them. These intermediaries constitute a marketing channel also called a trader channel or distribution channel (Tekele, 2010).

Formally, a marketing channel is a business structure of interdependent organizations that reach from the point of product origin to the consumer with the purpose of moving products to their final consumption destination (Kotler and Armstrong, 2003). The channel system creates time, place, possession and form utilities. However, the benefits of the channel system cannot be enjoyed without an element of cost. This channel may be short or long, depending on the kind and quality of the product marketed, available marketing services, and prevailing social and physical environment (Islam *et al.*, 2001). The channel may be direct or indirect. In the direct channel a producer and ultimate consumer deal directly with each other while in the indirect channel intermediaries are involved between the producers and final consumers and perform numerous channel functions.

### **2.1.5.3 Marketing system**

A marketing system is a collection of channels, intermediaries, and business activities, which facilitate the physical distribution and economic exchange of goods (Kohls and Uhl, 1985). The concept of marketing system embraces both the physical distribution of economic input and products and the mechanism for coordinating production and

distribution (Andargachew, 1990). Branson and Norvell (1983) defined the marketing system in terms of what is otherwise known as a marketing channel. Extensively, marketing system may be defined as the totality of product channels, market participants and business activities involved in the physical and economic transfer of goods and services from producers to consumers. The marketing system functions through a set of intermediaries performing useful commercial functions in chain formation all the way from the producer to the final consumers (Islam *et al.*, 2001). Therefore, a marketing system comprises several, usually; stable, interconnected structures that, along with production, distribution, and consumption, underpin the economic process (Mendoza, 1995).

#### **2.1.5.4 Marketing efficiency**

Efficiency in marketing is the most used measure of market performance (Kohls and Uhl, 1985). Improved marketing efficiency is a common goal of farmers, marketing organizations, consumers and society at large. It is a commonplace notation that higher efficiency means better performance, whereas declining efficiency denotes poor performance. Most of the changes proposed in marketing are justified on the grounds of improved efficiency (Kohls and Uhl, 1985). There are two aspects of market efficiency mostly mentioned in agricultural marketing literature, and these are technical (operational) efficiency and pricing (allocative) efficiency.

Technical efficiency (TE) is attained when goods and services are provided at a minimum average cost, that is, when the least cost combination of marketing activities is employed (Effiong and Onyenweaku, 2006). Technical efficiency is achieved through technical improvement. Pricing efficiency (PE) is concerned with the price-making role of the market system. It concerns how accurate, how effective, how rapidly,

and how freely the marketing system makes price, which measure product values to the ultimate consumer and reflects these values through the various stages of the marketing system to the producer (Andargachew, 1990).

Effective and efficient marketing system is the one that brings the production of those products and quantities which, when sold to the consumer results in utmost returns after the deduction of minimum marketing charges and production costs (Kohls and Uhl, 1985). However, consumer's satisfaction cannot be measured directly; changes can be analysed in terms of “technical” efficiency and “pricing” efficiency.

#### **2.1.5.5 Market information**

Market information is very important to cattle keepers, traders and consumers as it help them make decisions on what time to sell in the case of farmers and whether to buy or sell in the case of traders. Essentially, information required are price traded or available cattle, forecast of future supplies and demand, and general market conditions (LEISA, 2007). According to Ramatu *et al.* (2000) information must be relevant, accurate timely and reflecting all sectors of the market, especially consumer demand. Such information can be used by livestock farmers to shift their cattle to other markets with favourable prices (Kaoneka, 2006). In addition, Mukhebi (2004) claims that effective market information system reduces risks to both farmers and traders in their daily activities.

#### **2.2 Agricultural Marketing**

Agricultural marketing refers to all activities essentially associated with agricultural production and with food, feed and fibers assembly, processing and distribution to the final consumers. It also includes analysis of consumer's needs, motivation, purchasing and consumption behaviour (Ashimogo, 1994).

Besides the physical facilitating function of transferring the goods from producers to consumers, marketing systems also perform the functions of identifying the prices at different stages of marketing and send back price signals in the marketing chain (Ebbeden, 2004). Therefore, issues and concerns in marketing relate mainly to the efficiency of the marketing system which depends on the structure and conduct of the market (Acharya, 2006). Essentially, buyers and sellers need not to come together. However, in most African markets, it is vivid that that agricultural market involves physical interaction between buyers and sellers which gives a market a clearly defined geographical location.

However, cattle prices are settled through private individual mainly on spot negotiation between cattle keepers and traders (Aklilu, 2002). In a nutshell, livestock prices are affected by several factors which include period of sale, age, weight, colour, breed and physical body condition of the animal, the urgency of the household cash need, the distance livestock farmers travel to sell animals and ease of trekking animals back (Aklilu, 2002; Gebremedhin *et al.*, 2007).

### **2.2.1 Approaches used to the study of agricultural marketing**

The agricultural marketing study involves mainly three approaches of functional, institutional and the commodity.

#### **2.2.1.1 Functional approach**

This approach investigates marketing in terms of various activities that are performed to exchange product from producers to the consumers. These activities are called functions (Cramers and Jensen, 1982). This approach helps to compare costs and benefits of common different functions which are: a) exchange (buying and selling), b) physical

(processing, storage, and transportation), and c) facilitating (standardization, financing, risk bearing, and market information). It is claimed that, most of these functions are performed in the marketing of nearly all commodities.

#### **2.2.1.2 Institutional approach**

Institutional approach examines the activities of business organizations or people in marketing. The institutional approach focuses on the study of the various institutions, middlemen and other agencies which perform the marketing activities (Ahmad, 1995). These organizations or market actors are those who perform the operations necessary to transfer goods from the producer to consumer, because of the benefit of specialization and scale that exist in marketing as well as production (Cramers and Jensen, 2001).

#### **2.2.1.3 Commodity approach**

This activity encompasses the above two approaches in the marketing of one or more commodities. This approach focuses on what is being done to the product after its transfer from its original production place to the consumer (Kohls and Uhl, 1985). It helps to pinpoint the specific marketing problems of each commodity as well to develop the market for the specific commodity. The approach follows the commodity along the path between producer and consumer and is concerned with describing what is done and how the commodity could be handled more efficiently.

### **2.3 Pastoral and Agro-Pastoral Cattle Keepers Marketing Behaviour**

In developing countries and Tanzania in particular, sales of livestock are often motivated by the farmer need for cash than by the characteristics of demand or the state of the market (Djamen *et al.*, 2008). A study by Ruhangawebare (2010) found that, there was a

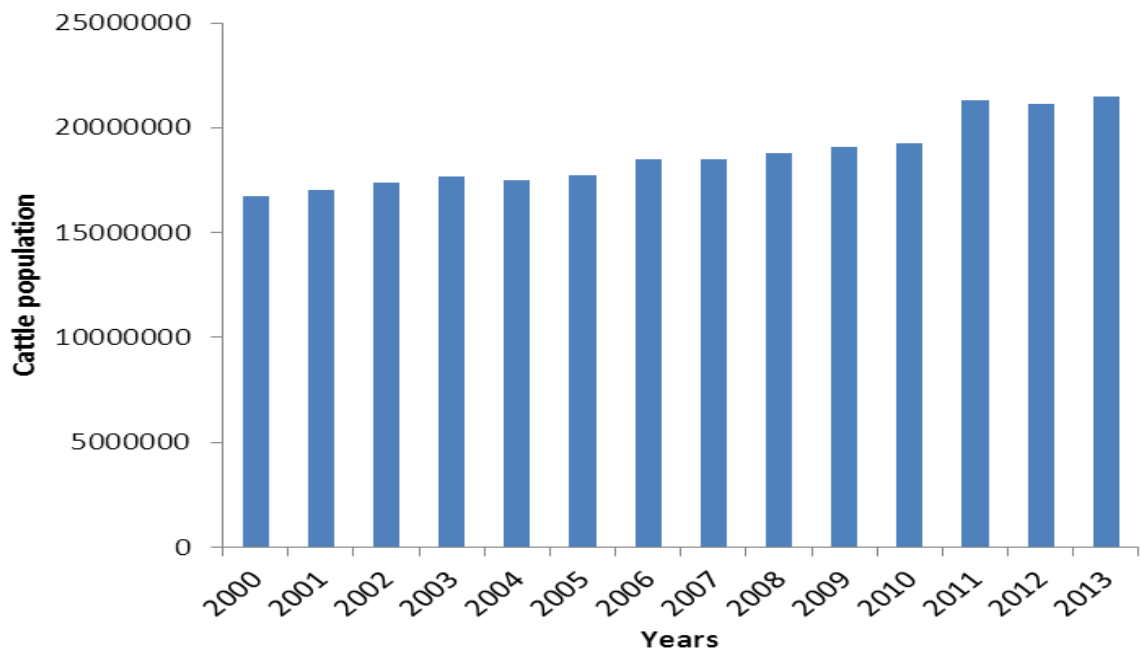


low importance attached to keeping cattle for commercial purposes. Therefore, livestock keepers do not respond to the demand and sometimes tend to hold on their livestock and only sell when they are cash constrained but not when it is most profitable (Ayele *et al.*, 2003; Marstrand *et al.*, 2005; Asfaw and Jabbar, 2008; Daniel, 2008; Mlote *et al.*, 2012) which subsequently results in low levels of income attained by farmers. Sandford (1983) observed that there was little supply response from the pastoralists to changes in prices for livestock, which was attributed to the low demand for cash other than for essentials such as schools fees, medication and taxes. In some cases, farmers are forced to sell cattle as an adaptive strategy to dry seasons and feed shortage (Gebremedhin *et al.*, 2007). The differences in cattle keepers' purpose/goal and perception to cattle rearing impede the formulation of useful livestock policies aimed at improving the livelihood of resource poor cattle farmers (Barrett *et al.*, 2003). Therefore, efforts to improve the rural cattle production and market supply of quality live beef cattle should emphasize the understanding of cattle keepers objectives/goals, perceptions and experience. That is, when livestock keepers are confronted with problems which require them to sell their cattle, off take is restricted to the non-productive elements of the herd such as cull cows, sick animals, sterile heifers, non-breeding bulls and bull yearlings (Semenye, 1980). However, livestock keepers' behaviour is changing and will be changing slowly with time (Mlote *et al.*, 2012). The advantage of changing behaviour would signify the improvement of cattle keepers' livelihoods as they would be selling their cattle at time, when they are healthier and hence profitable (Ruhangawebare, 2010).

#### **2.4 Beef Cattle Production and Meat Demand in Tanzania**

The production of beef in Tanzania has increased by 14% between the year 2002 to 2006, but the annual increase has not been that a great deal due to the outbreak of Rift Valley Fever (RVF) that struck in the year 2007 (Njombe and Msanga, 2008). However, after

the outbreak, cattle have been increasing from time to time. Figure 2 shows cattle production in Tanzania from the year 2000 to 2013 whereby in the year 2000 it was recorded to have a cattle population of 16 713 000 and has increased up to 21 500 000 in the year 2013 (FAOSAT, 2014).



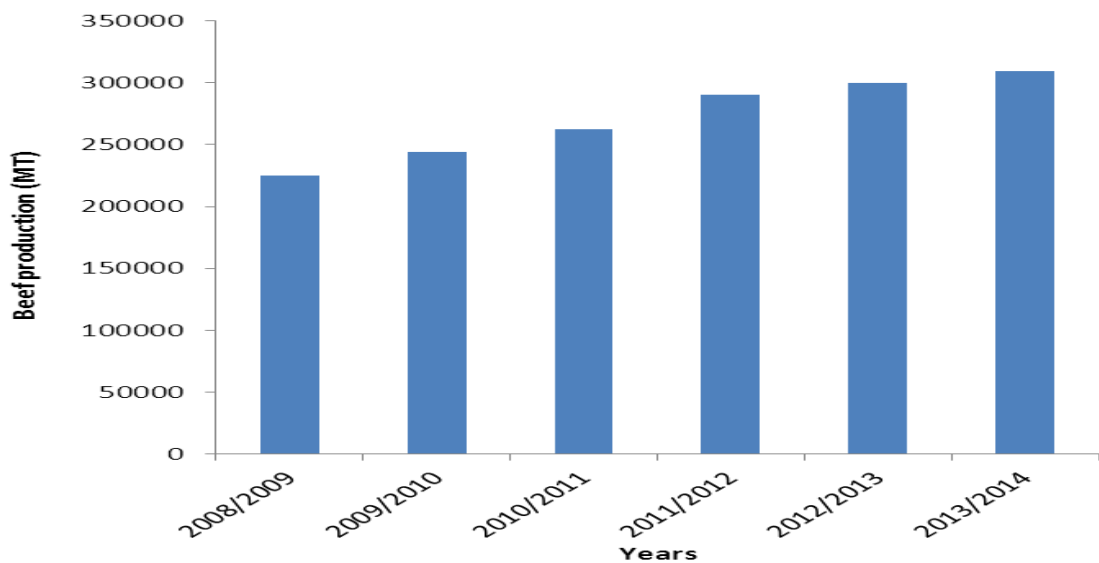
**Figure 2: Cattle population in Tanzania from the year 2000 to 2013**

Source: FAOSTAT, 2014.

Currently, the majority of livestock production is only subsistence whereby livestock and livestock products produced in the country is largely in the domestic market and only a small amount is exported (SAGCOT, 2013).

The meat industry is one of the important components in the livestock sector. For example, the average meat production in 2010/2011 was estimated at 503 496 tones (MLFD, 2011). Given the human population of Tanzania which stands at 44.9 million (URT, 2012) and taking into FAO consideration which recommends per capita

consumption of 50kg against the actual consumption of 12kg therefore, there is evidence of high demand for meat in the country (MLFD, 2011). Figure 3 shows beef production in metric tons from 2008/2009 to 2013/2014. In the year 2008/2009 beef production was 225 178MT and has increased up to 309 353MT in 2013/2014 (MLFD, 2014).



**Figure 3: Beef production in MT from the year 2008/09 to 2013/14**

Source: MLFD, 2014.

There is also a demand for investment in quality meat production to meet the requirement of the growing number of middle-income consumers. If this is the generality of how the local market has been growing, then it is a signal that market for beef will continue to increase in Tanzania.

A study by Mahabile *et al.* (2002) revealed that good quality of meat is generally in short supply and the price has been increasing. Also, tourism has been growing steadily; hotels and specialized restaurants are increasing annually so as to cover the niche market gap. This is evidenced by supermarkets coming in to take the market share of the growing

demand for quality meat (IFPRI, 2003). Institutional markets such as colleges/universities, prisons, hospitals etc have been growing in the country to capture the increasing number of cattle (SAGCOT, 2011).

### **2.5 Impact of Quality and Standards on Access to Markets**

In most countries, safety and quality of food is becoming a matter of increasing concern. Information is currently readily available to consumers through the mass media and they are aware of the existing and potential risks from pesticides residues, food poisoning and a poor diet (Fellow and Axtell, 1995). Competitiveness of food production depends on safety and the quality of the food, acceptability of production procedures than in quantity and price. The impact of this greater awareness can be seen by consumers preferring to buy food that are made by large manufacturers. All food marketing agents, including processors have the responsibility to provide consumers with safe, wholesome food. Safety is not an optional, but it is an essential part of the planning, preparation and production of food. Lack of safety consideration may result in a serious threat to public health. The law in most countries recognizes and serious penalties exist for those who contravene hygiene and food safety legislation (Fellow and Axtell, 1995).

In the case of Tanzania, food processors and marketers are required to comply with the quality of provision of standard and safe meat (URT, 2003). Therefore, provision of safe and good quality meat, therefore, is an obligation of everybody involved with the supply of food within the food chain. But, due to poor enforcement of this law; there are occasions when food and meat marketing agents do not consider food quality (UNIDO, 2012).

However, due to the emergence of supermarkets and the similar types of food retailing, the question of food quality has become an increasingly important aspect of agricultural marketing (IFPRI, 2003). Thus, small holder farmers, who sell their cattle, will find that buyers (traders) expect their cattle to meet agreed standards. In the case of exports, these standards are becoming more and more strict (Fellow and Axtell, 1995).

## **2.6 Beef Cattle Marketing and Value Chain in Africa**

Alemayehu (2011) studied a value chain assessment of beef cattle production and marketing in Ethiopia. The study found that smallholder farmers, exporters and traders are the major actors in the illegal cattle marketing system while medium to large-scale licensed exporters are dominantly operating in the legal system.

The main challenges for the beef cattle production and value chain was the unofficial cross-border trade dominated by influential personalities and illegal exporters. The author further argued that limited access to production and market-related information such as production systems, prices, value chains, competitors, consumer preferences and lack of capital to invest in assets, equipment and inputs that would improve quality are the major challenges faced by the market value chain. Alemayehu (2011) concluded that empowering poor smallholder farmers will help to provide high-quality, sustainable livestock production with an identified market destination and access to basic production inputs, credit, capacity-building and market-related information.

According to USAID (2009), taking a value chain approach requires understanding a market system in its totality. This includes all chain actors, supporters and the business environment in which the industry operates. The study also found out that, within many staple food value chains in Africa, relationships between actors at different levels of the

value chain were weak, disconnected or even adversarial. Information flows were often asymmetrical. In addition, there was a widespread lack of objective standards and grades. Consequently, transaction costs, risks and costs were high and lack of transparency means that value chain actors enter into negotiations with mistrust (USAID, 2009).

In Tanzania, Kadigi *et al.* (2013) studied the value chain of indigenous cattle and beef products in Ilemela and Magu districts. It was observed that there was a weak vertical and horizontal coordination along the beef cattle value chain. Furthermore, the authors contended that the largest share of GM was earned by butcherers (meat shop owners) who generated an average daily GM of TShs 306 000. These were followed by traders who fattened their beef cattle before selling who earned an average gross margin of TShs 190 700 per cattle. The latter would on average transport their trading stock and sell at the terminal market at Pugu in Dar es Salaam three times a year with an average stock of 25 cattle per trip. Of all actors in the value chain, pastoralists/agro-pastoralists earned the least, with an average gross margin of TShs 295 000. Kadigi *et al.* (2013) concluded that there is a need to strengthen the vertical integration of livestock farmers, meat processors, and traders. This requires that more strategic action should be taken, especially by the Tanzania Meat Board to bring together stakeholders who can articulate their needs and jointly get to build solid business relationships and a better organization of the chain.

A study done by Mlote *et al.* (2012) on value addition of beef cattle fattening in the Lake Zone, Tanzania found that spot market relations were the most common in the study area. There were no persistent network relationships or contracts practiced among actors or between actors with service providers. Interactions only involved making transactions such as negotiations on price and volumes of animals.

Furthermore, Mlote *et al.* (2012) contended that the sale price of cattle at 300 Kg live weight gives a GM of TShs 284 800 equivalent to 71 % of the value of sales, while the sale of cattle at 200 kg live weight gives a GM of TShs 242 400 which is 81% of the sales value, indicating that returns are higher if cattle are kept for shorter periods. It was evident that cattle traders who did not engage in fattening had GM of TShs 57 500, which is equivalent to 11.5 % of the total value of the sale. On the other hand, when traders engaged in adding value through fattening they earned a GM of TShs 141 400 per head of cattle, which is 20.2% of the sale value almost twice as much as the GM without fattening. The butcher owners earned a GM of TShs 198 000 equals to 31.8% GM as a percentage of sales.

Mlote *et al.* (2012) further argued that, in comparison of beef cattle fattening operator's margins (20.2%) with those obtained by pastoralists and agro pastoralists (71%), revealed that the beef cattle fattening operators earned higher GM since they could run 3 fattening cycles in a year of three months each, while pastoralists could only sell an animal after six or more years. The authors recommended that in order to improve beef cattle supply chain it requires equipping farmers with skills through training so that they are able to produce higher volumes and more consistent quality of beef that is better suited to the market requirements. Furthermore, the beef cattle supply chain should be upgraded to a vibrant value chain by supporting the evolution of collaboration and binding linkages among actors.

## **2.7 Theoretical Framework and Empirical Methods**

### **2.7.1 Theoretical framework**

According to the Neoclassical Economic Theory, a rational firm seeks to maximize profit or minimize cost in decisions to allocate resources to produce goods and services.

This implies that the firm should structure its output to incur the lowest possible cost per unit of output produced. The theory identifies three important efficiency measures namely technical, allocative and profit efficiency.

This study seeks to examine efficiency in terms of the practices of a firm to keep cattle at minimum cost in various stages in beef cattle value chain among actors. However, distribution of production and market related costs among various actors is strongly related to transaction costs and marketing efficiency of which a powerful party can dictate efficiency mechanism, bargaining position of other actors, and information asymmetry between various nodes along the chain.

The study also attempts to apply insights from the New Institutional Economics (NIE) to investigate issues of transactions costs and their influence on the performance along the beef cattle value chains. To achieve profit efficiency in the production sector efficient institutions are important in minimizing transaction costs arising from exchange process (Alene, 2003).

The NIE defines institutions as the rules that govern social interaction. They are the rules of the game and include both formal (laws, contracts, political systems, organizations and market) and informal (norms, traditions, customs, value systems, religion, sociological trend) that facilitate coordination or govern relationships between individuals or groups (Kherallah and Kirsten, 2001).

Broad discussion about transaction cost from the NIE come from the work of Williamson on transaction cost economics (Williamson, 1998). Transaction costs provide the key to understanding alternative forms of economic organization and contractual arrangements,



where the focus is on the cost of conducting a transaction in one organization or contractual form relative to others which result on maximizing profit. Transaction costs arise due to search for and screening of potential buyers and suppliers, negotiating and contracting with them, and monitoring and enforcing their adherence to the contracts. These processes involve flow of information which has to be efficient for the parties to benefit (Kherallah and Kirsten, 2001).

### **2.7.2 Sub-sector mapping**

A Sub-sector is defined as a vertical grouping of enterprises involved in the production and marketing of one well-defined product or several closely related products (Boomgard *et al.*, 1992). A commodity sub-sector does not necessarily lie strictly within one particular sector; it can cut across other sectors. For example, cotton is grown in the agriculture sector, shipped in a factory by the transport sector, processed in the manufacturing sector, and so on. The key is the network, which is based around a common raw material or a common output. An essential tool for the analysis of this system is the sub-sector map. The map illustrates the flow of products from producer to consumer in quantitative, graphic terms, as well as the interrelationship among participants in the sub-sector. The components that should be illustrated in the map include the market, function, participants and the channels (Mmasa *et al.*, 2011).

Today, sub-sector analysis is seen as very similar to value chain analysis (indeed the terms are often used interchangeably). However, advocates of the Global Commodity Chain school of Value Chain Analysis see sub-sector analysis as being restricted to activities within national boundaries (Wildt *et al.*, 2006). Moreover, sub-sector analysis remains an important tool in any program (Lusby, 1999) as it enables program designers

to get a clear grasp of what's going on between the different actors (large and small) in a particular industry.

Sub-sector mapping was used by UNIDO (2012) to map the red meat value chain in order to get information about where and how value is generated in the red meat sector in Tanzania. The study showed that the red meat value chain include; primary producers, traders, feed lotters, slaughters, butchers, retailers and end consumers. The study also found that most actors engage in more than one function.

### **2.7.3 Gross margin (GM) of beef cattle marketing enterprises**

The focal encouraging aspect of beef cattle value chain actors to assure their endeavour to continue producing and marketing of beef cattle is the level of profit generated by the enterprises. GM is a gross return minus the total variable expenses, which can be expressed in normal value, ratios or as a percentage of return (Debertin, 1993). Other writers define GM's as the difference between total revenue and total variable cost (Msangi, 2000; Mlulla, 2003). Johnsen (2003) defined GM as the difference between the values of an enterprise gross output and variable cost of that production. GM analysis has been concerned with identifying returns (profits) obtained by actors along the value chain of beef cattle marketing.

To calculate GM of different enterprises in different segments along beef cattle value chains requires a detail analysis of the account of the enterprises, noting precisely the cost incurred and the value added at each stage along the value chains (Debertin, 1993). Kadigi *et al.* (2013) used GM to analyse profit for indigenous cattle and beef products. The findings show that producer level returns are greater if cattle are kept for short periods (few years) than longer periods. Market fees, transportation costs, as well as the

costs of acquiring movement permits and unofficial payments en-routes were proportionately less than 1%. Overall, the largest share of gross margins was earned by butchers and meat shop owners who generated an average daily gross margin of TShs 306 000. These were followed by traders who fattened their beef cattle before selling who earned an average gross margin of TShs 190 700 per cattle. Of all actors in the value chain, pastoralists earned the least, average GM of TShs 295 000 for a period of 4 to 5 years.

#### **2.7.4 Marketing margins**

Marketing margin or price spread is a commonly used measure of the performance of a marketing system (Abbott and Makeham, 1990). According to Haji (2008), marketing margin refers to the difference between what the consumer pays and what the producer/farmer receives for his product. In other words, it is the difference between retail price and farm price. It can be a useful descriptive statistics if used to show how the consumers' expenditure is divided among market participants at different levels of the marketing systems. A wide margin means usually high prices to consumers and low prices, to producers (Gebgziabher, 2010).

Understanding the concept of market costs and margins requires a priori understanding of the marketing chains or channels under question and a prescription of how long is it. According to Tomek and Robinson (1990), marketing margins provide neither a measure of farmers' well-being nor of marketing firms' performance. However, they give an indication of the performance of a particular industry or an indication of the market's structure and efficiency. Therefore, marketing margins are the result of demand and supply factors, marketing costs, and the degree of marketing channel competition (Ojogho *et al.* 2012). Furthermore, Sexton *et al.* (2001) argued that even though variations in the

margin over time might be attributable to marginal marketing costs under perfect competition, additional factors such as seasonality, technological changes, and sales volume may also explain the variations in the margin.

### **2.7.5 Regression analysis**

Regression analysis is a statistical forecasting model that is concerned with describing and evaluating the relationship between given variables i.e. the dependent and independent variables (Manage, 2007). The regression analysis can be used to predict the outcome of a given dependent variable based on the interaction of other related explanatory variables. The term “linear” regression will always mean a regression that is linear in the parameters ( $\beta$ 's). The parameters are raised to the first power only (Gujarati, 2004).

Regression models assume that: the predictors are linearly independent, i.e. it must be possible to express any predictor as a linear combination to others. In addition, the error term is a random variable that has a mean equal to zero in the population and constant variance i.e.  $\varepsilon \sim N(0, \sigma^2)$ , and lastly, the variance of the error terms must be constant (Hoffmann, 2010).

Mlote *et al.* (2013) used a multiple linear regression model to analyse the determinants of beef cattle profitability (Equation 2). Essentially, the multiple regression method was used to estimate the direction and magnitude of the relation between the profit per animal and variables that are hypothesized to have an effect on profit. The regression model for the relationship between these variables and profit was estimated using a profit function as defined in equation 1.

$$\Pi_{ij} = f(X_{ij}) \dots\dots\dots (1)$$

Whereby:

- $\Pi_{ij}$  = is the profit level of the  $i^{\text{th}}$  respondent in  $j^{\text{th}}$  district;
- $f$  = is a function term;
- $X_{ij}$  = Denotes the variables considered to affect the profit of the  $i^{\text{th}}$  respondent in  $j^{\text{th}}$  district.

Using Multiple Linear Regression Model (MLRM), the profit function was estimated as shown in Equation 2.

$$\Pi_{ij} = \alpha + \beta_{ij}X_{ij} + \mu_{ij} \text{ for } i=1, 2, 3, \dots, n \text{ and } j= 1 \text{ and } 2 \dots\dots\dots (2)$$

Whereby:

- $\Pi_{ij}$  = Profit for  $i^{\text{th}}$  respondent in the  $j^{\text{th}}$  district,
- $\alpha$  = Constant term (y- intercept),
- $\beta_{ij}$  = Coefficients for independent variables,
- $\mu$  = Error term (disturbance term), representing all factors that affect variation of the dependent variable, but are not captured by the independent variables.

Mlote *et al.* (2013) found that, the prices for buying and selling the animals as well as transportation cost for purchasing and selling were the major determinants of profitability for beef cattle fattening enterprises in the study areas. The adjusted  $R^2$  of the model was 0.9487 which meant that, the independent variables explained 94.87% of the variation in the profit per animal in the beef cattle fattening enterprises. On the other hand; herd size, age of an animal, sex of beef cattle, the feed cost per kg, duration of fattening and labour

cost per animal were found to be statistically insignificant at  $P < 0.05$ . A similar method was used by Winsten *et al.* (2000) who analysed profitability of dairy feeding systems in the Northeast, United States of America. And found that herd size, milk production per cow, debt level and veterinary expenses to farm profitability in all production systems were statistically significant at  $p < 0.05$ .

### **2.7.6 Marketing efficiency**

The concepts of 'efficient market' or 'integrated markets' are used interchangeably. Marketing efficiency refers to the ratio of input and output (Kohls and Uhl 1967). An increase in this ratio, represents improved efficiency and *vice versa*. It is considered to be a pre-requisite for punctual delivery of goods. Marketing efficiency is determined by two factors i.e. economic efficiency and technical efficiency. Economic efficiency deals with matters related to trading or pricing to enhance the degree of competition. According to Lipsey and Harbury (1992) economic efficiency has two components: (i) Productive efficiency, and (ii) Allocative efficiency. Productive efficiency is a situation when it is not possible to produce more of any one good without producing less of any other good. Allocative efficiency involves choosing between productively efficient bundles. Technical efficiency on the other hand, tries to apply the least cost input combination. There are two criteria to measure marketing efficiency, one is price spread and the other is market integration.

Generally, marketing efficiency is viewed in three ways (i) Maximization of input output ratio as a resemblance of marketing efficiency i.e. raise output by lowering input (ii) Competition or effective market structure as an indicator of marketing efficiency i.e. elimination of wasteful marketing costs or competence of market structure (iii) Lower

price spread or marketing margin as a condition of marketing efficiency i.e. Price spread is considered as an indicator of marketing efficiency and it is more realistic (Cramers and Jensen, 1982). According to Mahoo (2011) factors determining marketing efficiency include low marketing costs, low marketing margin, and market structure, the nature of the commodity, the socio-political system and price stability. In an efficient market system, such costs should be recovered plus a reasonable return of investment (Pomeroy and Trinidad, 1995).

Kotler (1998) suggested that any measure to increase productivity and efficiency in production should be accompanied by efficient product marketing. If the marketing system functions efficiently, the operation will be undertaken at lower costs, which may lower market margins resulting in both higher prices and lower costs for consumers (Debrah and Antench, 1991).

Acharya (1988) argued that the efficient marketing has several advantages, including an increase in the farm production, thereby stimulating the emergence of additional surpluses, means for raising the income levels of the farmers and enable the consumers to obtain the greatest possible satisfaction at the least possible cost. Research conducted by Kazemnezhad and Sadrol-esharghi (2000), Hassanpour (2000), Shajari (2002) and Samsami (2004) on marketing margins of different producers, concluded that the existence of an efficient market especially in the agricultural sector has an immense importance. This is fact because, efficient market raises income levels of farmers and at the same time consumers derive the greatest possible satisfaction at the least possible cost.

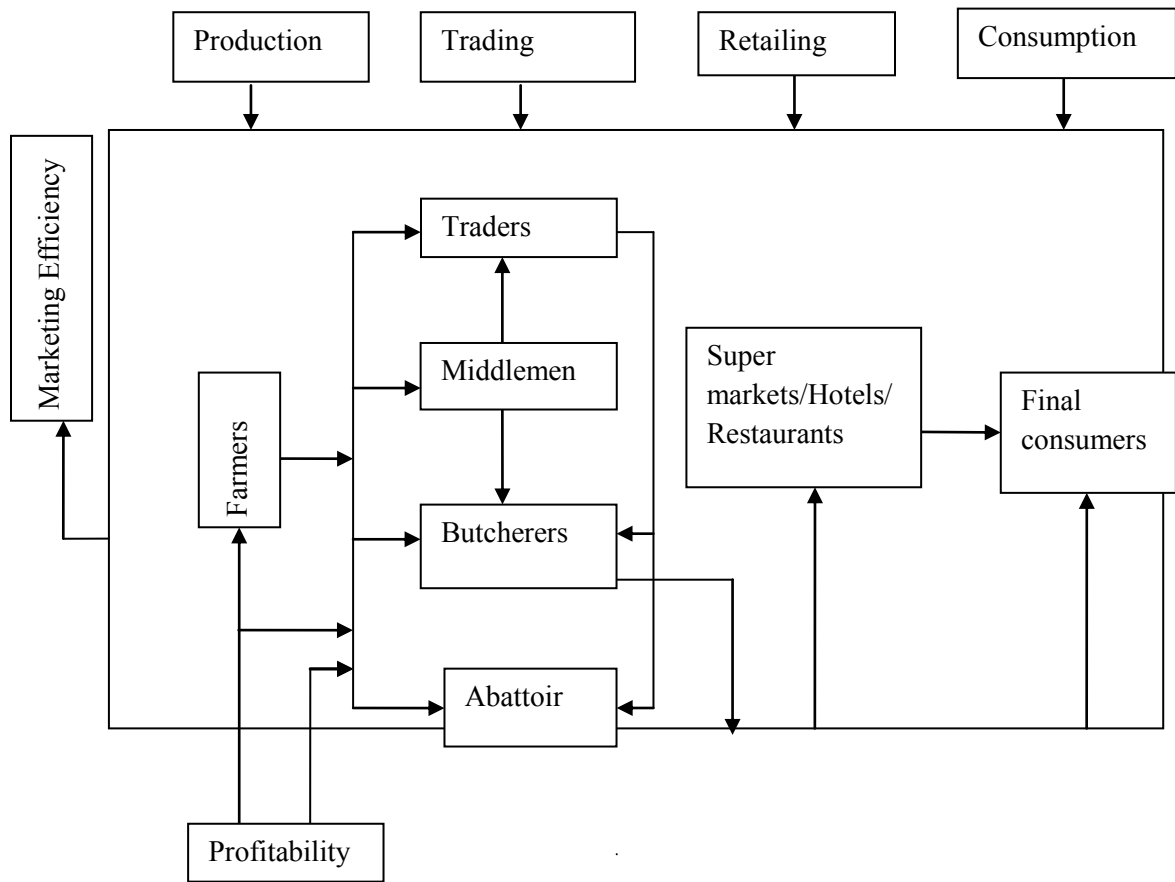
Emam (2010) contended that, marketing efficiency at wholesaler's meat poultry in Khartoum State market can be increased through reducing marketing costs, provision of extension and credit services and encouraging investment in the efficiency activity. Likewise, a study conducted by Omar *et al.* (2014) on Marketing System and Market integration of different egg markets in Bangladesh using Archarya's Method found that, there were only two marketing channels. In channel II the consumer paid the lower price per 100 eggs compared to channel I, though in practice channel I was mainly used for selling eggs in the study area. It was therefore deduced that, Channel II (5.97) was efficient compared to channel I (5.40).

According to Scarborough and Kydd (1992), the value of marketing efficiency ranges from 0% to infinity. This means that if the market efficiency is 100%, it implies that the market is perfectly efficient because the price increment is high enough to cover the cost of marketing beef cattle. If it happens that the marketing efficiency is higher than 100% it indicates excess profit. Conversely, if marketing efficiency is less than 100% it signifies inefficiency.

## **2.8 The Conceptual Framework**

The conceptual framework for analysing beef cattle marketing efficiency in Longido and Monduli district, Arusha region is presented in Figure 4. From the field survey, beef cattle value chain actors were identified from farmers (producers), middlemen, traders, butcheries, supermarkets/Hotels and end up with the consumer. It was conceptualized that farmers may trade with a number of actors depending on time, place and situations. If the whole system is working properly and if there are good links between all actors in the chain, the market will be efficient since the profitability between one actor and the other will be substantial.





**Figure 4: The conceptual framework**

## CHAPTER THREE

### 3.0 METHODOLOGY

#### 3.1 The Study Area and Justification for Selection

The study was conducted in Tanzania specifically, Longido and Monduli districts which are in Arusha region. The two districts are dominated by pastoralists and agro-pastoralists whose main economic activity is livestock raising (URT, 2013). There are numbers of primary livestock markets, where cattle, sheep and goats are sold. In addition the two districts are close to Arusha city, where there are potential niche markets for the livestock products. These districts are encircled by tourist hotels and presence of residents with middle class income who can purchase beef.

#### 3.2 Description of the Study Area

##### 3.2.1 Longido district socio-economic characteristics

Longido district is situated in Arusha region, in Northern part of Tanzania. The district is bordered by Meru and Rombo districts to the East, Ngorongoro to the West, Monduli and Arusha districts to the South and Siha districts to the South East. To the North lies the Republic of Kenya (Figure 5). Based on National population and housing census report URT (2013), the human population is estimated to be 123 153 out of which 60 199 are males and 62 954 are females. Average house hold size is 5. The district is divided into 4 divisions, 16 Wards, 41 Villages and 136 sub villages. Seven wards out of 16 and 9 villages were formed in the year 2010 (Longido District Council, 2014).

Geographically, Longido district covers a total area of about 7938.6 km<sup>2</sup> of which almost 85 percent of the area is suitable for livestock keeping while the remaining 4 percent is only used for agriculture. Land area is about 7782 km<sup>2</sup> while the area under water is

estimated to be 156.6km<sup>2</sup>. Topographically; Longido district is situated between Latitude 2.20<sup>0</sup> and 37.3<sup>0</sup> and 3.1<sup>0</sup> South of the Equator and longitude 36.0<sup>0</sup> East of Greenwich.

The district is recorded as one of the driest areas in Tanzania, where the temperature ranges from 20<sup>0</sup>C – 35<sup>0</sup>C (Longido District Council, 2014). Rainfall ranges from less than 500mm in low lands to 900mm in high elevation. From year 2007 the district experienced prolonged dry season. The short rain season normally starts in October and ends December while the long rain starts from February to April.

The main economic activity in Longido district is livestock farming. Livestock and its products contribute over 80% to the district economy since a large area over 743 365 hectares (95% of the total district land) is a grazing land. The district is estimated to have a total of 905 347 livestock of which 356 664 are cattle 329 673 are goats 192 970 are sheep 22 730 are donkeys 300 are camels and 3000 poultry (Longido District Council, 2014).

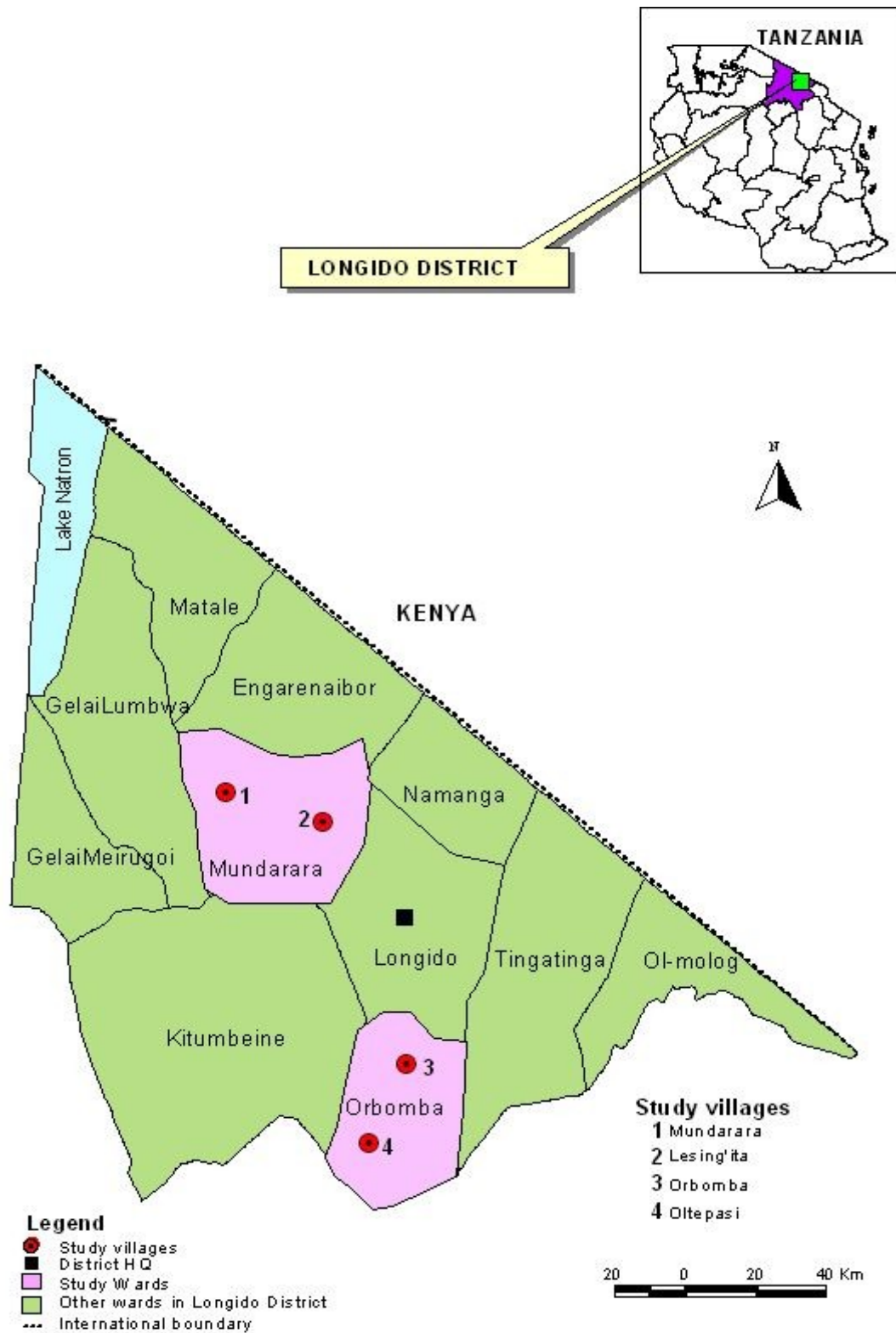


Figure 5: Map of Longido district, Tanzania

### **3.2.2 Monduli district socio-economic characteristics**

Monduli is among the seven councils of Arusha Region of Tanzania. The district borders Arumeru district to the East, Ngorongoro and Karatu districts to the West, Mbulu and Babati to the South and Simanjiro district to the South-East and Longido district to the North (Figure 6). According to National Population and Housing Census report URT (2013), the human population of Monduli District is estimated to be 158 929, out of which 75 615 are males and 83 314 are females. Average house hold size is 4.7 and the sex ratio is 91.

The main ethnic groups residing in the district are Maasai (40%), Waarusha (20%) and other people (40%) who belong to ethnic immigrant groups whose activities are trading, tourism, farmers and those who are employed in the civil and private service sectors in the District (Monduli District Council, 2014). Geographically, Monduli district has a total surface area of 6547.4 km<sup>2</sup> of which 6419 km<sup>2</sup> is land area and 128.4 km<sup>2</sup> are covered by water. About 1055 km<sup>2</sup> is arable land and 374.9 km<sup>2</sup> is under forests. Topographically, Monduli district is between latitudes 3.00<sup>0</sup> to 4.50<sup>0</sup> South of the Equator and Longitudes 36.50<sup>0</sup> to 36.45<sup>0</sup> East of Greenwich Meridian. It experiences only one rainy season ranging from less than 500mm in low lands to 900mm at high elevations. The district has three climatic zones – the highlands, flat and rolling plains and the Rift Valley (Monduli District Council, 2014). The main economic activity in Monduli district is livestock keeping, agriculture and wildlife. Livestock keeping is a largest economic activity and covers about 53% of all economic activities in the district (Ibid, 2014). The District is estimated to have a total number of 356 546 livestock of which 129 408 are cattle 89 935 are goats 59 313 are sheep 9870 are donkeys and 20 are camels.

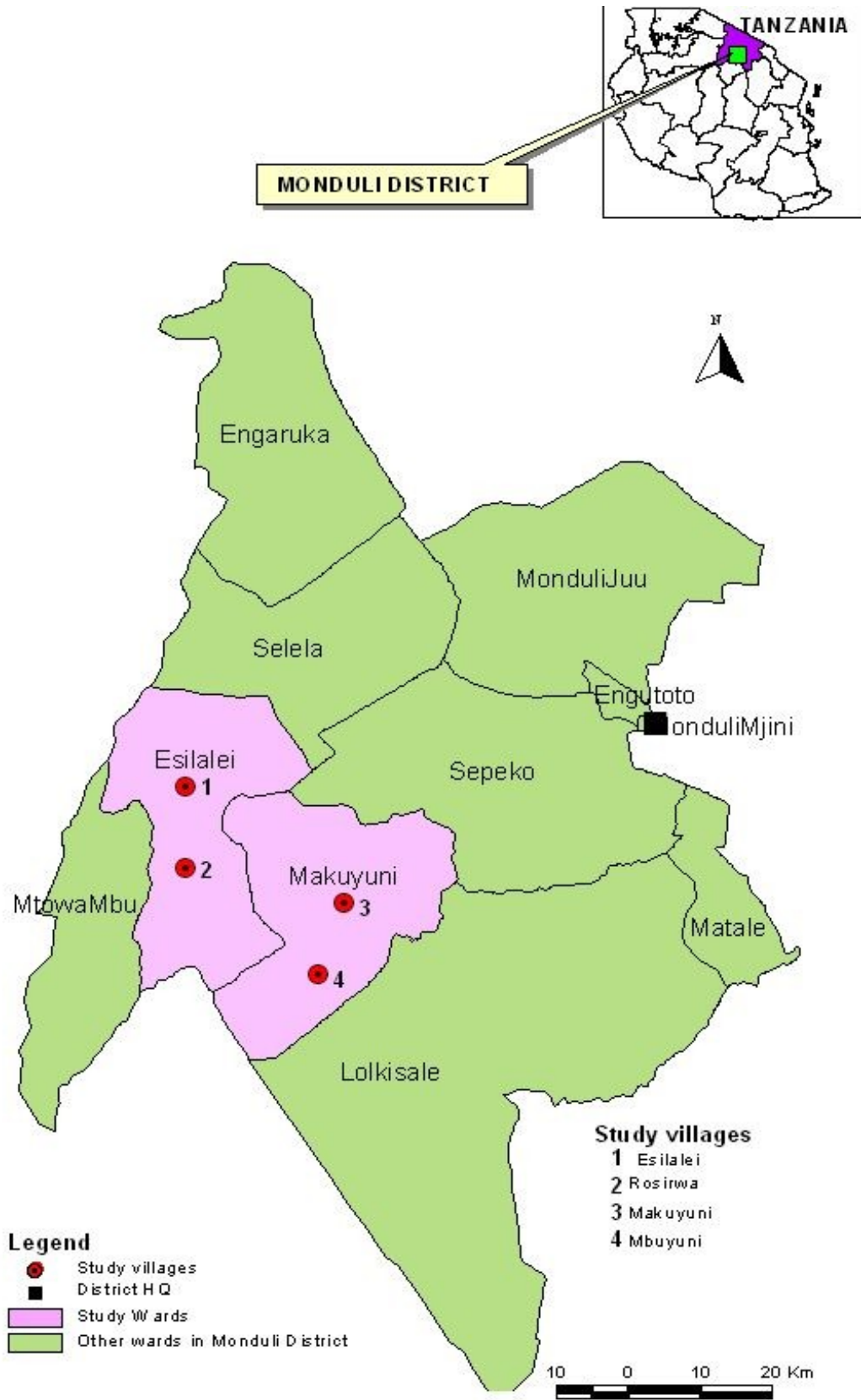


Figure 6: Map of Monduli district, Tanzania

### **3.3 Research Design**

A cross sectional research design was used for this study. Under this design, data from beef cattle value chain actors' i.e. livestock keepers, traders, butchers and consumers were collected at a single point in time without repetition from the representative population. The design was appropriate in descriptive study and for determination of the relationship between and among variables.

### **3.4 Sampling Unit and Sample Size**

The sampling frame for this study constituted of beef cattle value chain actors in the study area. A simple random sampling technique was used to select wards and markets basing on cattle herd size and access to the market. Then, stratified sampling method was used in the selection of villages which were grouped based on market proximity. From the two strata (near and far to the markets) a simple random sampling technique was used to select livestock keepers (80) in the villages. Using the simple random sampling technique, two wards from each district were selected (making a total of 4 wards and in the two districts). Furthermore, wholesalers and retailers were randomly selected in which four wholesalers from each district and 10 retailers from each district were interviewed. Finally, 20 consumers were randomly selected from each district from the study area (Table 1).

Simple random sampling was used to select 2 primary markets in each district (Mto wa Mbu and Makuyuni) in Monduli district and (Orbomba and Mundarara primary markets) in Longido district. Two secondary markets (Meserani and Themí) were also chosen. In addition, five supermarkets and five high class hotels were sampled to determine the source of their beef and requirements. Only one processor was interviewed as there is

only one processing industry in Arusha. This made the total sample size of 191 respondents.

**Table 1: Sample size summary of beef cattle value chain actors**

<b>Player/actor</b>	<b>Number</b>	<b>Location</b>
Livestock keepers	80	Monduli and Longido Districts
Traders	40	Monduli and Longido Districts
Butcheries	20	Monduli and Longido Districts
Processor	1	Arusha City
Consumers	40	Monduli and Longido Districts
Hotels/Supermarkets	10	Arusha City
<b>Total</b>	<b>191</b>	

### 3.5 Sampling Techniques

In selecting villages and sub-villages, list of livestock keepers were obtained from village extension officers from which sample of livestock keepers was randomly drawn from it (Table 2).

**Table 2: Sampled wards and villages by region and districts**

<b>Region</b>	<b>Districts</b>	<b>Wards</b>	<b>Villages</b>
Arusha	Monduli	Makuyuni	Makuyuni
			Mbuyuni
		Longido	Esilalei
	Rosirwa		
	Mundarara		Orbomba
		Lesing'ita	



### **3.6 Questionnaire Pre-testing**

The survey instruments for livestock keepers, traders and consumer were developed before the exercise of data collection. These questionnaires were pre-tested to see if they answer the stated objectives and their clarity to the respondents. A total of 20 questionnaires were administered during pre-testing of the questionnaire and the exercise conducted in Manyoni district. The district was selected because it has related characteristic, including having a large number of cattle amounting to 276 431 (Manyoni District Council, 2014).

### **3.7 Data Collection Methods**

Both primary and secondary data collection methods were used to obtain the information required for the study.

#### **3.7.1 Primary data**

Data used in this study were largely primary data collected from the samples of respondents using structured questionnaires, semi structured questionnaires and observation. The questionnaires were designed for livestock keepers, beef consumers, butchers, Hotels/Supermarkets, abattoir and traders. A structured questionnaires was administered to producers/farmers, processor, traders and consumers while semi-structured interviews were conducted with key informants (i.e. Village Extension Officers).

#### **3.7.2 Secondary data**

In this study secondary data were obtained from District Agricultural offices, from reading various publications from the Ministry of Livestock and Fishery Development,

Sokoine National Agricultural Library (SNAL) and the internet. Secondary data used by the researcher to supplement information from primary data.

### **3.8 Data Processing and Analysis**

The data collected from beef cattle livestock keepers, traders and consumers and processor were coded for analysis. The options for the close ended questions were assigned numbers while in open ended questions all possible answers were identified and summarized. Data entry was done using the Statistical Package for Social Science (SPSS) computer program version 16. Gross margins and marketing margin analysis were used to estimate profit and efficiency along beef cattle value chain. Regression analysis was used to identify factors influencing profitability of beef cattle production at farm level.

#### **3.8.1 Qualitative analysis**

Qualitative analysis involved the computation of descriptive statistics such as frequencies and cross tabulation. Qualitative data were analysed by content analysis. These data were used to summarize the characteristics of beef cattle value chains.

#### **3.8.2 Quantitative analysis**

Quantitative analysis involved gross and marketing margin analyses, regression analysis and marketing efficiency.

##### **3.8.2.1 Sub-sector mapping analysis**

Sub-sector mapping analysis was used to map beef cattle value chain linkages between actors, processes and activities in the value chain. The aim was to visualize the networks in order to get a better understanding of the interconnections between actors and

processes in the value chain, to demonstrate the interdependency between actors and processes in the value chain (Michael *et al.*, 2010).

### **3.8.2.2 Gross margin analysis**

Mlulla (2003) defined gross margin as the difference between total revenue and total variable costs. It is used as a measure of enterprise profitability and the means of selecting farm plans. There are various measures of profitability of the enterprises which are Gross Margin (GM), Return on Investment (ROI), Benefit-Cost Ratio (BCR or B/C), Internal Rate of Return (IRR), and Marketing Margin (MM) (Turuka, 2000). However, Kotler and Armstrong (2006) argued that to date there is no adequate measurement of profitability available in the marketing sector.

All the same, the GM remains an important measure of resource efficiency in small and Medium Enterprises. Debertin (1993) identified some problems of using GM as a measure of profitability, which are failing to deduct the opportunity costs for the money invested in the enterprise. Furthermore, Ponte (2002) argued that GM has several disadvantages including failure to account for variation of fixed costs, and failure to make allowances of costs for depreciation and obsolescence of fixed assets. However, GM should only be compared with figures from farms with similar characteristics and production systems enterprise (Barnard and Nix, 1979). With this reservation in mind, the comparisons can give a useful indication of the production and economic efficiency of an enterprise. The GM per head for cattle can be compared with 'standards' (published averages of what might be typically possible in average conditions) obtained from other farms.

Phiri (1991) argued that, GM is still the most satisfactory measure of resource efficiency Small and Medium Enterprises. It gives a good indication of the financial health of enterprises; and shows the deep insight into traders' management efficiency of the enterprises (Hammod, 2001). Moreover, computing GM across different enterprises is vital because traders tend to shift tied capital to more highly profitable enterprises or segments in beef cattle marketing systems. Thus, the higher the GM earning enterprises warrant the traders' working capital to more profitable enterprises. Hence, working capital is switched off from low GM enterprises to highly GM earning enterprises (Rweyemamu, 2001).

Gross Margin Analysis (GMA) was used to estimate profit for beef cattle actors. GM was calculated using the following formula:

$$GM_i = TR_i - TVC_i \dots\dots\dots (3)$$

Whereby:

$GM_i$  = Gross margin at point i (in TShs)

$TR_i$  = Total revenue at point i (in TShs)

$TVC_i$  = Total Variable costs at point i (in TShs)

$i$  = Represent points along the supply chain such as production, cattle trading, cattle slaughtering and selling meat.

**Operational formula:**

TR in this case was the summation of the number of cattle sold (N) times their corresponding selling price (P).

$$TR = \sum_1^n N \times P_y \dots\dots\dots (4)$$

Whereby;

- TR = Total Revenue
- N = Number of cattle sold
- $P_y$  = Selling price

$$GM = \sum P_y N_y - \sum P_x N_x \dots\dots\dots (5)$$

Where;

- $P_x$  = Price of inputs used in raising beef cattle;
- $P_y$  = Price of beef cattle (Selling price);
- $N_x$  = Quantities/Volume of input/beef cattle;
- $N_y$  = Quantities/volume of output/beef cattle.

Likewise, the same formula was used in calculating GM for butcherers / meat shops: whereby N was the number of cattle slaughtered and the price per kilogram of beef sold.  $N_y$  stands for the quantity of output obtained multiplied by the price cost ( $P_y$ ). On the other hand,  $N_x$  stands for the price of inputs used in producing the beef and  $P_x$  for the price of beef. Using the GMA model, the gross margins per head for pastoralists/ agro pastoralists, traders and butcherers/meat shops owners were calculated. Note that, the gross margins calculated accrued from the annual gross margin per cattle estimated by calculating the difference between annual average revenue (AR) and the annual average costs as presented in equation 6.

$$AGM = AR - AVC \dots\dots\dots (6)$$

Whereby:

AGM = Average Gross Margins

AR = Average revenue per cattle per year

AVC = Average variable costs of input used for raising a cattle

Further, in determining the profit (GM) accrued by the cattle farmers, the study employed future value (FV) technique on an investment (Average variable costs) to see how worth at some point in the future through compounding, i.e., what would be the value of cattle in n years. The future value calculated in estimating variable costs after n year (s) employed 10.88% as an interest rate in predicting the expected cost in the future (Bank of Tanzania, 2014). Time has been considered to be the basic determinant factor for profit due to inflation. Inflation is an increase in the general price level of the economy and therefore inflation occurs when the quantity of money in circulation rises relative to the quantity of goods and services offered (Branson, 1989). The result of inflation is “too much money purchasing too few goods,” and prices are high. As a farm management tool, compounding and discounting are useful concepts even if there were no inflation in the economy (Makeham and Malcolm, 1986). Therefore, knowledge of number of years the cattle stay before it was sold was important.

The future value (FV) equation was as follows:

$$FV = PV * (1 + r)^n \dots\dots\dots (7)$$

Whereby:

FV	=	Future value of the investment at the end of $n$ periods (years)
PV	=	Present value, in today's money in TShs, of a sum of money you have already invested or plan to invest
$n$	=	Number of years in the future
$r$	=	Interest rate

According to Gittinger (1982), earlier returns are better than late returns due to time factor and inflation. The principal is useful to overcome the weakness of the discounted/compounded measures when there is time inclusion dimension to any project.

#### **3.8.2.4 Regression analysis**

A linear regression model was used to analyse the determinants of livestock keepers' profitability whereby livestock' gross margin was taken as a function of other seven variables such as education level (years of schooling), loan/credit, market information, market location (distance in km from farm to the livestock market), age in years of livestock farmers and veterinary services and experience of livestock farmers. The model for profitability was specified as follows:

$$\Pi = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \delta_1 D_1 + \delta_2 D_2 + \delta_3 D_3 + \mu \dots\dots\dots (8)$$

Whereby:

$\Pi$	=	Gross margin in TShs/cattle
$\alpha$	=	The intercept of the regression equation
$\beta_1 - \beta_4$ and $\delta_1 - \delta_3$	=	The parameters estimated
$X_1$	=	Distance to the market in km
$X_2$	=	Education level of livestock farmers in years
$X_3$	=	Experience of livestock farmers in years
$X_4$	=	Age of the livestock farmers in years
$D_1$	=	Credit provided to farmers (1=Yes 0=otherwise)
$D_2$	=	Market information (1=Yes 0=otherwise)
$D_3$	=	Veterinary services availability (1=Yes 0=otherwise)
$\mu$	=	Error term

### **Model reliability**

The reliability of the regression model may be undermined by a violation of the assumptions underlying Ordinary Least Square (OLS) regression analysis. Any violation of the assumptions (independent variable not being normally distributed, heteroscedasticity, multicollinearity and autocorrelation) would cause the model not to be reliable and thus counted to be faced with problems. Regression equations are associated with a number of problems depending on the type of data used, the nature and form of regression used in the analysis. In this study the expected regression problems were heteroscedasticity and multicollinearity as cross sectional data were used. Heteroscedasticity indicates the uneven distribution of the error term while multicollinearity describes a situation of which one or more independent variables are



highly correlated. The rule of thumb for multicollinearity is a Variance Inflation factor (VIF) of 5 or greater, or if the condition number (CN) is greater than 20 indicates severe multicollinearity (Engle, 1982). But data for this study were free from the mentioned problems (Table 22).

### 3.8.2.5 Marketing efficiency

Marketing efficiency for the various beef cattle actors in different channels were estimated using Acharya's Modified Marketing Efficiency (MME) formula as presented in Equation 9.

$$MME = \frac{FP}{MC + MM} \dots\dots\dots (9)$$

Whereby:

- MME = Modified measure of marketing efficiency
- FP = Price received by farmers or First seller Price
- MC = Marketing cost
- MM = Marketing margin of intermediaries

Marketing margins were calculated using the following formula:

$$TGMM = CP - FP \dots\dots\dots (10)$$

$$MM = (CP - FP) - MC \dots\dots\dots (11)$$

Whereby:

- TGMM = Total Gross Marketing Margins
- CP = Consumer Price

Several methods can be employed to measure market efficiency; these are conventional, Shephard's Method and Acharya's Method (Reddy and Raghuram, 2008). Both conventional and Shephard's methods have not used in this study, because they do not consider the price received by the farmer in a market and do not take into consideration marketing margin as part of a marketing cost respectively. This study adopted Archarya's method to measure marketing efficiency because it takes care of the limitations of Conventional and Shephard's Methods.

### **3.9 Limitations of the Study**

Information sought from some of the respondents was based on past experiences; therefore, it was somehow hard to recall especially considering that the majority of those respondents did not keep records. Again, some respondents were a bit reluctant to provide sensitive details such as questions involved their income earned and number of cattle. In overcoming these limitations, the research team spent some additional time looking for respondents and sometimes call-backs and physical revisits was done.

## CHAPTER FOUR

### 4.0 RESULTS AND DISCUSSION

#### 4.1 Socio-economic Characteristics of Livestock Farmers

The characteristics of respondents have a significant socio-economic connotation on production, marketing and marketing decision on where and when to sell the produce. According to Randela (2005) demographic characteristics of households are essential when analysing economic data because such factors influence the households' economic behaviour. This section describes the characteristics of sampled households based on age, primary occupation, education level and experience in beef cattle keeping.

##### 4.1.1 Age of respondents

The findings show that a large number of respondents were aged between 36-45 years, of which 30% were from Monduli district and 40% of Longido district (Table 3).

**Table 3: Respondents age categories**

Age in years	Name of District				Average (%)
	Monduli	Percentage	Longido	Percentage	
< 25	03	7.5	01	2.5	5.0
25-35	11	27.5	09	22.5	25.0
36-45	12	30.0	16	40.0	35.0
46-55	11	27.5	11	27.5	27.5
56-65	01	2.5	03	7.5	5.0
65+	02	5.0	00	0.0	2.5
<b>Total</b>	<b>40</b>	<b>100.0</b>	<b>40</b>	<b>100.0</b>	<b>100.0</b>

However, 7.5% of respondents of Monduli district and 2.5% of Longido district were less than 25 years. Age can affect the experience, wealth and decision making which in turn affects how one works and hence, can influence enterprise productivity (Singh *et al.*, 2003).

#### 4.1.2 Education level of respondents

The findings show that, about 48.75% were respondents with primary education in both districts (Table 4). However, only 3.75% of respondents in both districts reported to have attained a college education.

**Table 4: Education level of respondents**

Education level of respondent	Name of District				Average (%)
	Monduli	Percentage	Longido	Percentage	
No formal education	15	37.5	18.0	45.0	41.25
Primary education	20	50.0	19.0	47.5	48.75
Secondary education	04	10.0	1.0	2.5	6.25
College	01	2.5	2.0	5.0	3.75
<b>Total</b>	<b>40</b>	<b>100.0</b>	<b>40.0</b>	<b>100.0</b>	<b>100.0</b>

Education plays a paramount importance in all aspect concerning the day to day activities. Formal education helps someone to decide rationally and hence enabling him/her to manage his/her business and operates in the required specifications. Results shows that most of livestock farmers have not attended at school and others have primary education. This aspect reduces the ability of farmers to argue and defend in light of selling their cattle in the markets. According to Mather and Adelzadeh (1998) people with higher educational levels are more able to interpret information than those who have less education or no education at all. Also, Harmon *et al.* (2003); Mareth, (2004); Baum and Jennifer (2007) reported that, education has a significant social capital that determines the status, health, lifestyle and quality of life of an individual in a particular society. In addition, a study done by Isabella and Steve (2007) found a positive relationship between years of formal education and higher bargaining power for educated cattle keepers since learned cattle keepers are more likely to use the existing market information more efficiently thus negotiate for a higher price and have more sales rate.

### 4.1.3 Experience in beef keeping

The findings show that, respondents who had experience between 21-30 years were reported to be 37.50% in both Monduli and Longido districts on average. However, respondents who were in the experience category of 41 years and above reported to be only 3.75% on average in the two districts (Table 5).

**Table 5: Experience in cattle keeping**

Experience in years	Name of District				Average (%)
	Monduli	Percentage	Longido	Percentage	
< 10	01	2.5	00	0.0	1.25
10-20	13	32.5	12	30.0	31.20
21-30	13	32.5	17	42.5	37.50
31-40	11	27.5	10	25.0	26.25
41+	02	5.0	01	2.5	3.75
<b>Total</b>	<b>40</b>	<b>100.0</b>	<b>40</b>	<b>100.0</b>	<b>100.0</b>

In both theoretical and practical situations, experience of farmers is an important human capital that can influence the production efficiency, profitability, business performance and market conduct of an individual and the society at large (Nganga *et al.*, 2010). The proper use of drug/medications, dipping/spraying will highly depend on experience and knowledge of the farmer. This assertion is in line with Musemwa *et al.* (2007) who claimed that, experience has a vital role in the farmer's choice for better market channels and levels for receiving good prices. Therefore, it is expected that long experience in cattle keeping would enable the livestock producers to increase productivity and improve quality of cattle.

### 4.1.4 Primary occupation of respondents

The findings show that, 97.5% of the respondents depend on livestock farming as their main primary occupation in both districts (Table 6).

**Table 6: Primary occupation of respondents**

Primary occupation of respondents	Name of District		Average (%)
	Monduli	Longido	
Wage employment	01	00	1.25
Cattle keeping	39	39	97.50
Business	00	01	1.25
<b>Total</b>	<b>40</b>	<b>40</b>	<b>100.0</b>

That is, the majority of respondents interviewed totally depend on livestock keeping. Therefore, it is a signal that the livestock sector is the main economic activity in both districts. This would also mean that, if livestock keeping is properly managed, will contribute significantly to the households' levels and the region's economy as well.

## 4.2 Cattle Keeping and Marketing Arrangements in the Study Area

### 4.2.1 Purposes for keeping cattle by pastoralists/agro-pastoralists

The respondents indicated that there was a wide range of reasons for which households kept cattle. These reasons varied across cattle keepers depending on the individual needs either directly (e.g. food) or indirectly (e.g. income) as shown in Table 7. These results show the low importance attached to keeping cattle for commercial purposes (37.50%) as opposed to the provision of security/insurance (82.50%) followed by being a store of wealth (70%).

**Table 7: Purposes for keeping cattle by pastoralists/agro-pastoralists**

Cattle keepers purpose N=80	District		Average (%)	Rank
	Longido (%)	Monduli (%)		
Prestige	25	30	27.5	7
Way of life	40	50	45.0	5
Store of wealth	75	65	70.0	2
Security/insurance	85	80	82.5	1
Food	65	50	57.5	3
Source of income	45	60	52.5	4
Commercial purpose	35	40	37.5	6

This study found that the pastoralists in Longido and Monduli districts attached low importance to commercial cattle keeping, as a result elucidating the low off take since the cattle keepers objective is not keeping cattle for selling, but rather as a security in case of problems such as illness and in fulfilling family expenses such as school fees and purchase of animal drugs. Thus, the few cattle sales that are made are meant for problem solving but not as intentional selling to earn profit from their sales.

The use of cattle as a store of wealth was also reported by Ruhangawebare, (2010) who noted that pastoralists in the Central and Western Regions of Uganda, used cattle as a store of wealth instead of commercial purpose. The more likely pastoralists' use banking as a store of wealth or saving storage alternative, the more likely they were to regulate their cattle herds. Kosgey *et al.* (2008) also claim that most pastoralists in Kenya kept livestock /small stock for regular cash income or as an insurance against emergencies.

#### 4.2.2 Credit facilitation to livestock farmers

The study shows that about 91.25 % of the farmers who were interviewed have not accessed loans from banks or financial institutions. Only 8.7% were found to have accessed credits (Table 8).

**Table 8: Farmers' access to loans/credits**

<b>Credit Facilitation</b>	<b>Frequency</b>	<b>Percentage</b>
Yes	07	8.75
No	73	91.25
<b>Total</b>	<b>80</b>	<b>100.0</b>

Among the reasons is the lack of collaterals for enabling farmers to secure loans. Other reasons are lack of information on how to secure loans and complicated procedures to get loans. These at times have left the gap between livestock keepers and financial institution, which are supposed to work together so as to uplift the beef cattle industry.

### 4.2.3 Market information

The findings show that 57.5 % of cattle farmers need to go to the market and take available cattle prices on that day for business transactions while 38.8% got it from fellow cattle keepers/friends (Table 9). There was a lack of easily accessible and reliable formal market information especially on prices. This at times was due to unreliable or lack of accurate information received by cattle keepers from traders or other players in the value chain, thus contributing to the decreasing efficiency of cattle trade transactions.

**Table 9: Major sources of market information**

<b>Source of information</b>	<b>Percentage</b>
Friends/fellow cattle keepers	38.8
Radio/news papers	1.2
Direct visit to the markets	57.5
Traders	2.5
<b>Total</b>	<b>100.0</b>

Large percentage of respondents reported to depend on actual market day information or market information obtained from fellow cattle keepers, traders and friends for prices and selling decisions. This is a result of information asymmetry where the traders have more information than the cattle farmers, which is a market imperfection thereby maddening negotiations between the sellers and traders. The availability of market information would boost confidence of farmers who are willing to market their produce.

Essentially, information is a prerequisite and a required tool on price setting, or available cattle, forecast of future supplies and demand, and general market conditions (LEISA, 2007). Mukhebi (2004) claim that the effective market information system reduces the risks to both farmers and traders on proper arrangement of when and what to sell in a



given markets. In addition, Barrett *et al.* (2005) asserted that information networks suffice to generate and distribute adequately reliable and timely information about market conditions. Musemwa *et al.* (2008) also found that pastoralist in communal farmers in South Africa lacked livestock market information especially on prices.

#### 4.2.4 Mode of price determination at the producer level

The findings show that, price determination is highly fixed by buyers 60% in both districts (Table 10). On the other hand the decision by the seller was merely small as it was only reported to be 5%.

**Table 10: Mode of price determination between farmers and traders**

<b>Mode</b>	<b>Percentage</b>
Negotiation	35
Final decision of the buyer	60
Final decision of the seller	05
<b>Total</b>	<b>100</b>

Analysis shows that, farmers are forced to comply with the proposed price by the buyer because farmers are the price takers and not price setters. Thus traders exploit farmers since price is agreed between the cattle keeper and the trader basing on the eye ball observations. Similar findings were reported by Ruhangawebare, (2010) who claimed that traders at times took advantage over cattle keepers due to lack of weighing stations, thus under estimate the live weight of the animal on sale so as to negotiate a lower price. Prices received by farmers are an important factor in the marketing system, especially influencing contribution of livestock to economic development (UNIDO, 2012).

#### 4.2.5 Factors considered by beef cattle keepers in setting prices

Farmers have their own criteria in setting prices for their produces (Table 11). In both districts, the study found that criteria for setting price for cattle were observation of physical condition, weight of cattle, cattle breed and age of cattle.

**Table 11: Factors considered in setting the price of beef cattle**

Factors for setting Price	District		Average (%)	Rank
	Monduli (%)	Longido (%)		
Physical body observation	100.00	92.50	96.25	1
Weight	87.50	82.50	85.00	2
Breed	52.50	35.00	43.75	3
Age	45.00	20.00	32.50	4

Results show that, the main factor considered in setting price was a physical body observation. This factor accounts for 96.25% (Table 11). This means that livestock keepers would charge high price for the cattle with large size regardless of other factors. These findings are in line with Wurzinger *et al.* (2008) also found that cattle keepers selected specific classes of animals with desired traits such as coat colour, horns size and shape, fertility, milking history for breeding purposes thus offered higher prices.

#### 4.3 Mapping of Beef Cattle Value Chains

A range of production and marketing functions undertaken in the beef cattle value chain are production, transportation, processing, retailing and consumption (Fig.7).

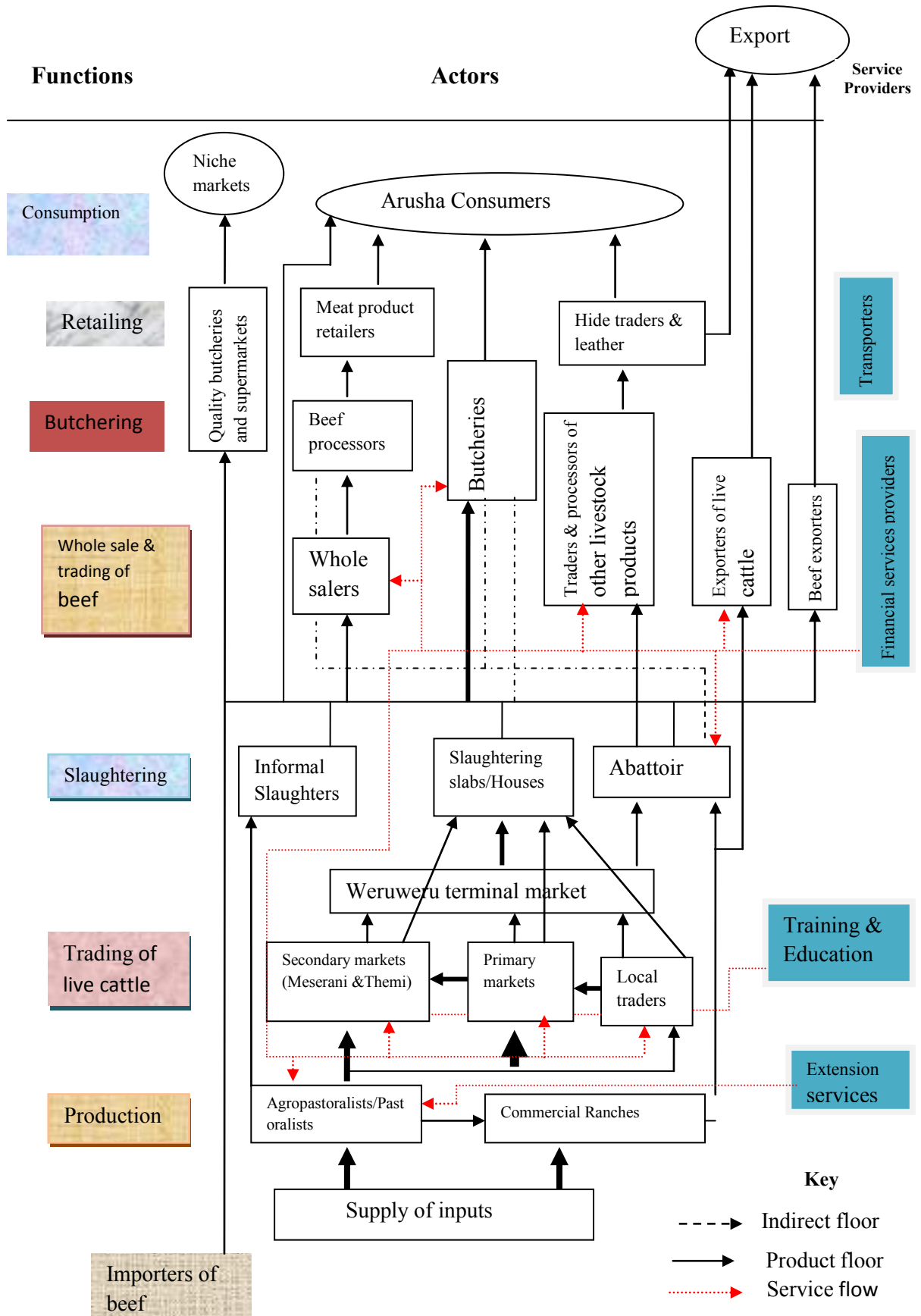


Figure 7: Value chain map in Longido and Monduli districts

The map was developed through interview of various actors in the chain. This enabled to identify potential markets, functions of each actor along the chain and the entire flow of product from production to final consumers. The actors involved are presented as nodes within the space of the value chain map. Production and business support services are inputs supply, financial services, education training and extension services. Marketing functions are presented in a vertical axis on the left hand side of the diagram and the existing actors are represented using boxes with solid outlines, which may encompass several vertically integrated functions. The flow of product between actors and markets are represented by dashed lines. The product and/or service flow between nodes are represented by arrows. The end market segments are placed at the top of the diagram. There were also unofficial markets where cattle were sold to Kenya through Bisili due to good prices offered by Kenyan buyers.

Generally, as depicted in Figure 7 above, farmers receive TShs/kg 4135 from middlemen, middlemen receives TShs/kg 4327 from traders, traders receives TShs/kg 5090 from butcher men and butcher men received TShs 6000 from consumers. In addition, there is another route where traders buy cattle directly to cattle keepers at a price of 4327 TShs/kg where these flows to Abattoir sold at a price of 5090 TShs/kg, all the way flows to supermarkets sold at 7000 TShs/kg and finally are sold to the final consumer (middle and higher income carder) at 9000 TShs/kg. However there were other flows of products exported as live cattle in other countries.

#### **4.3.1 Actors in beef cattle value chain**

Different actors exist in the beef cattle value chain in Longido and Monduli districts.

The major actors in the beef value chain in the study areas are producers (farmers), middlemen, traders, abattoirs, butchers, supermarkets, hotels and individual consumers

(final consumers). However, middlemen dominated the market and reported to be the major means of market information. The characteristics of each of the actors are as follows:

#### **4.3.1.1 Beef cattle farmers**

Cattle farmers in Monduli and Longido districts supply beef cattle to the primary markets around their districts and subsequently are bought by traders who send directly to Meserani Secondary market or finish some cattle which seem to have low weight before re-selling them at higher prices.

#### **4.3.1.2 Beef cattle traders**

Beef cattle producers in Monduli and Longido districts sell their animals to traders in the primary or secondary markets in their proximity. Beef cattle markets in the study area were dominated by middlemen who act as a bridge between buyers (traders) and sellers. Middlemen contact pastoralists everywhere in the market and only 10% of pastoralists managed to meet traders and the larger population of pastoralists (85%) sold their cattle to middlemen. Then traders buy the animals from primary or secondary markets, assemble and transport them to the terminal markets like Meserani, Rokii and Weruweru.

Traders purchase 4 to 8 animals or more in a given market day depending on the arrangement of a particular day and place. On average a cattle of about 200kg was estimated to cost about TShs 450 000. In most, cases they have the financial power to deal with their customers, including butcherers either for cash or on credit basis. Beef cattle traders incur various costs, including market fees, Labour costs (herder's wages), food, transport and cattle movement permits.

#### **4.3.1.3 Butcherers/meat shop operators**

Owners and operators of butcherers/meat shops are the category of actors who bought animals from the primary or secondary markets for immediate slaughter. These actors act as a bridge between traders and consumers. Some butcherers go directly to livestock markets to buy live cattle, however, they end falling in the hands of middlemen. Findings show that only 5% of pastoralists reported to trade with butcherers. They sell meat on a retail basis to restaurants, street vendors and the ultimate consumers. These also incur costs like holding pen fee, slaughtering fee, market fee, meat transportation and movement permit. Other Butchery/meat shops operators are supplied by their beef suppliers on contract basis. It should be noted that butchery/meat shop operators play an important role as they link producers, traders and final consumers. Arusha region is reported to have about 260 butcher/meat shops.

#### **4.3.1.4 Domestic abattoir**

In the two districts namely Monduli and Longido no abattoir exists. A modern abattoir is found in Arusha City. This abattoir is owned by the Arusha City Council and thus provides formal slaughter services to butcheries and the general public. This abattoir buys cattle directly from secondary markets, national ranches and livestock farmers. The designed capacity of the Arusha meat abattoir is to slaughter about 250 cattle per day, but due to inadequate infrastructure for handling cattle and the basic tools and equipments needed for slaughtering the number of cattle slaughtered per day are only 150 cattle. On the other hand, Arusha meat abattoir has a capacity of only 100kg of beef cattle per day. Meat from the abattoir is sold to domestic markets (supermarkets, hotels and lodges, industrials, institutions and final consumers) and some exported to Middle East countries.

#### 4.3.1.5 Supermarkets

Supermarkets mainly sell raw as well as processed beef and by-products directly to consumers for home consumption. These supermarkets are found in Arusha city and other urbanized areas whereby storage (chilling and cold chain system) is maintained hence shelf life is extended. Supermarkets undertake further processing and packing activities at their premises. Since such processing and packing require special competency, they need skilled persons (in processing and packing meat for retail outlets) and have them trained.

#### 4.3.1.6 Hotels

These are other important actors because they act as intermediate consumers as they are supplied with carcasses as per their specific requirements by butcherers. Currently, there are about 31 classic hotels in Arusha City. Meat is bought directly from butcheries or from the abattoir for those hotels in Arusha city and the nearby. However, the meat quality was seen to be the most significant factor for beef consumption for hotels (Table 12). The findings show that 100 % of hotels managers' respondents reported that, purchase and consumption of meat was based on the quality of beef.

**Table 12: Quality of beef as a factor of consumption**

<b>Consumption of beef depends on Quality attribute</b>	<b>Frequency</b>	<b>Percentage</b>
Yes	05	100
No	0	0
<b>Total</b>	<b>05</b>	<b>100</b>

#### 4.3.1.7 Consumers

These are the final actors in the value chain. These individual consumers buy meat from different sources like butcheries and informal slaughtering especially in villages. The study revealed that consumer decision to purchase beef among other things, were subject

to quality by 45%. However, the cost item was not a key factor for consumers in decision to purchase beef (Table 13).

**Table 13: Factors in the decision to purchase beef**

<b>Factors</b>	<b>Frequency</b>	<b>Percentage</b>
Quality beef	18	45
Cost	8	20
Cleanliness	14	35
<b>Total</b>	<b>40</b>	<b>100</b>

Moreover, findings show that, consumers prefer a particular type of beef for consumption based on its attributes. It was found that, about 50% of the respondents interviewed preferred tenderness (Table 14). However, the colour of meat was not given priority in the sample population of respondents interviewed as it accounted only of 10%.

**Table 14: Beef quality attributes preferred by consumers**

<b>Beef attributes</b>	<b>Frequency</b>	<b>Percentage</b>
Tenderness (flavour, juiciness, palatability, texture)	20	50.00
Appearance (Freshness)	7	17.50
Fat distribution	9	22.50
Colour	4	10.00
<b>Total</b>	<b>40</b>	<b>100.0</b>

#### **4.3.2 Service providers**

Apart from trading, there were service providers that support the value chain development. These included the commercial and public services. These were financial institutions and Non Government Organizations (NGO's), Researchers and extension facilities. Other service providers were stockists who supplied drugs and medicines. Findings also show that, 60% of the pastoralists/agro-pastoralist interviewed reported to



have attended at least one training on keeping cattle and market development in both districts.

#### **4.4 Beef Cattle Actors' Gross Margins**

##### **4.4.1 Pastoralist and agro pastoralists gross margins with constant prices**

Table 15 and 16 presents a summary of costs, revenues and gross margins earned by pastoralists/agro-pastoralists in Monduli and Longido Districts by taking costs by number of years over time. These costs were computed and compared to cattle sold at two different ages, 4 and 6 years using information gathered from pastoralists/ agro-pastoralists. Profitability analysis results at the producer level (Table 15) show that, returns are higher if cattle (bulls) are kept for a short period than longer periods. On average, the sales price of a 6 years old bull in Monduli and Longido districts was found to realize a GM of TShs 295 421 which is equal to 59.08% of the value of sales on average.

On the other hand sales price of a bull of about 4 years in Monduli and Longido districts realizes a GM of TShs. 313 614 which is 69.69 % of the sales value on average. This margin is relatively higher, indicating that returns are higher if cattle are kept for shorter periods and sold than being kept for long. Therefore, the cost was lower amounting to TShs 136 386 on average compared to the total cost for 6 year old bull of TShs 204 578 on average (Table 15). Drugs/Medications were the highest cost item, amounting to about 34.2% of the total cost in both districts on average.

**Table 15: Gross margin analysis for a bull: taking costs by number of years**

<b>I) Monduli district</b>	<b>Value by age of sold cattle</b>			<b>Proportion of TVC (%)</b>
	<b>TShs/Head per year</b>	<b>TShs /Head for 4 years</b>	<b>TShs/Head for 6 years</b>	
<b>a) Cost TShs</b>				
Labour for herding	8 807.59	35 230.36	52 845.54	23.2
Dipping/Spraying	5 972.06	23 888.24	35 832.36	15.7
Drugs/Medications	12 708.91	50 835.64	76 253.46	33.4
Deworming	5 122.01	20 488.04	30 732.06	13.5
Other Variable Costs	5 388.87	21 555.48	32 333.22	14.2
<b>Total Variable costs</b>	<b>37 999.44</b>	<b>151 997.76</b>	<b>227 996.64</b>	<b>100.0</b>
<b>b)Revenue</b>				
Selling Price (TShs)		450 000.00	500 000.00	
Gross Margins(GM) (TShs)		298 002.24	272 003.36	
GM as a % of sales		66.22	54.40	
<b>II)Longido district</b>				
<b>a) Cost in (TShs)</b>				
	<b>TShs/Head per year</b>	<b>TShs /Head for 4 years</b>	<b>TShs/Head for 6 years</b>	<b>Proportion of TVC (%)</b>
Labour for herding	7 016.41	28 065.64	42 098.46	23.2
Dipping/Spraying	4 193.32	16 773.28	25 159.92	13.9
Drugs/Medications	10 590.71	42 362.84	63 544.26	35.0
De-worming	3 318.52	13 274.08	19 911.12	10.9
Other costs	5 074.53	20 298.12	30 447.18	17.0
<b>Total cost</b>	<b>30 193.49</b>	<b>120 773.96</b>	<b>181 160.94</b>	<b>100.0</b>
<b>b)Revenue</b>				
Average Selling Price (TShs)		450 000.00	500 000.00	
Gross Margins (GM) TShs		329 226.04	318 839.06	
GM as a % of sales		73.16	63.77	
Average GM (TShs) in Monduli and Longido districts		313 614.14	295 421.21	
Average % of sale in Monduli and Longido districts		69.69	59.08	

It's true that, keeping cattle for long time reduces GM which would be obtained if kept for short time. In the case of cows GM's were retarding compared to a bull sold at the same age. Empirically, the findings reveal that, a cow sold at 4 years old had a gross margin of TShs 243 614 equals to 64.10% of the sales value on average compared to a bull which earn about TShs 313 614 equals to 69.69 % of the sales value on average. A

cow of 6 years old when sold would earn a GM of TShs 95 421 equals to only 31.81% of the sales value on average as compared to the bull of the same age earns a GM of TShs 295 421 which is equal to 59.10% of the value of sales on average. Notwithstanding of cows being sold at lower prices TShs 380 000 and TShs 300 000 for 4 years and 6 years old respectively (Table 16), cows have other advantages like food security in the period of lactation for the provision of milk for home consumption. As cows produce calves, their health deteriorates with time.

In general, pastoralists and agro pastoralists usually keep livestock for some years before selling them; they only sell when they are constrained by cash. It was reported that cattle are kept for 4 to 6 years and sometimes longer before they are sold. Their costs of keeping livestock included; labour for herding, drugs/medications, dipping services, deworming and other costs which could not be easily figured out due to lack of records. However, it was realised that, costs cattle rearing was different from district to district and it was reported to be slightly higher in Monduli district compared to Longido district due to the fact, that prevalence of some diseases in Monduli district was more pronounced compared to Longido district. On top of that, the study found that Longido district is tsetse fly free zone (URT, 2014).

**Table 16: Gross margin analysis for a cow: taking costs by number of years**

I) Monduli District	Value by age of sold cattle			Proportion of TVC (%)
	TShs/Head per year	TShs/Head for 4 years	TShs/Head for 6 years	
<b>a) Cost in (TShs)</b>				
Labour for herding	8 807.59	35 230.36	52 845.54	23.2
Dipping/Spraying	5 972.06	23 888.24	35 832.36	15.7
Drugs/Medications	12 708.91	50 835.64	76 253.46	33.4
Deworming	5 122.01	20 488.04	30 732.06	13.5
Trekking costs	5 388.87	21 555.48	32 333.22	14.2
<b>Total cost</b>	<b>37 999.44</b>	<b>151 997.76</b>	<b>227 996.64</b>	100
<b>b) Revenue</b>				
Average Selling Price (TShs)		380 000.00	300 000.00	
Gross Margins (GM) (TShs)		228 002.24	72 003.36	
GM as a % of sales		60.00	24.00	
<b>II) Longido district</b>				
	Value by age of Cattle (Cow)			Proportion of TVC (%)
	TShs/Head per year	TShs/Head for 4 years	TShs/Head for 6 years	
<b>a) Cost in (TShs)</b>				
Labour for herding	7 016.41	28 065.64	42 098.46	23.20
Dipping/Spraying	4 193.32	16 773.28	25 159.92	13.90
Drugs/Medications	10 590.71	42 362.84	63 544.26	35.00
De-worming	3 318.52	13 274.08	19 911.12	10.90
Other costs	5 074.53	20 298.12	30 447.18	17.00
<b>Total Variable costs</b>	<b>30 193.49</b>	<b>120 773.96</b>	<b>181 160.94</b>	100.00
<b>b) Revenue</b>				
Average Selling Price (TShs)		380 000.00	300,000.00	
Gross Margins (GM) TShs		259 226.04	118,839.06	
GM as a % of sales		68.21	39.61	
Average GM (TShs) in Monduli and Longido districts		243 614.14	95 421.21	
Average % of sale in Monduli and Longido districts		64.10	31.81	

#### 4.4.1.1 Gross Margins estimation using future value of costs used

Table 17 presents a summary of revenues and gross margins earned by pastoralists/agropastoralists in Monduli and Longido Districts. The costs were computed and compared for beef cattle (bull) sold at two different ages, 4 and 6 years using the future values.

**Table 17: Gross margin analysis of a bull basing on the future value**

<b>Monduli District</b>						
<b>Period(Years)</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
Cost (PV)	37 999.44	37 999.44	37 999.44	37 999.44	37 999.44	37 999.44
Compounding factor**	1.1088	1.2294	1.3632	1.5115	1.6759	1.8583
Future value (TVC per cattle)	42 133.78	46 716.51	51 800.84	57 436.15	63 683.26	70 614.36
Total Variable cost				198 087.28	219 636.76	332 384.90
Selling price				450 000.00	470 000.00	500 000.00
Gross margins (GM)TShs				251 912.72	250 363.24	167 615.10
Gross margins as a % of sales				55.98	53.27	33.52
<b>Longido District</b>						
<b>Period (Years)</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
Cost (PV)	30 193.49	30 193.49	30 193.49	30 193.49	30 193.49	30 193.49
Compounding factor**	1.1088	1.2294	1.3632	1.5115	1.6759	1.8583
Future value (TVC per cattle)	33 478.54	37 119.88	41 159.77	45 637.46	50 601.27	56 108.56
Total Variable Cost				157 395.64	174 518.37	264 105.48
Average selling price				450 000.00	470 000.00	500 000.00
Gross margins(GM)TShs				292 604.36	295 481.63	235 894.52
Gross margins as a % of sales				65.02	62.87	47.18
Average GM (TShs) in Monduli and Longido districts				272 258.54	272 922.43	201 754.81
Average % of sale in Monduli and Longido districts				60.50	58.07	40.35

\*\*Interest rate =10.88% and assumed to be constant for a calendar of six years

Findings on profitability at the producer level reveal that, when calculating the costs by using the future value, the profits obtained by the farmer were not the same as when one decided to multiply the costs obtained in one year by the following years on the assumption of constant costs for each year. On average, the profit received by a 4 year old bull in assumption of constant costs in each year for both Monduli and Longido districts was TShs 313 614 which is equal to 69.7 % of the value of sales on average. But, when time factor was taken into consideration (Table 17) the findings showed that the GM was low, amounting to TShs 272 258.54 which is equal to 60.50%.

Studies done by (Mlote *et al.*, 2012; TIB, 2012; Kadigi *et al.*, 2013) employed GM technique to compute profits obtained from selling live cattle by first finding the costs incurred in rearing such cattle (Table 15 and 16) for a year and then multiplied by the number of years without considering inflation and the future value. This study adopted the same method of computing gross margin of cattle; however, it went further and compared the gross margin obtained by considering future value of money and inflation and when these variables are not considered. The results showed that there was a substantial difference in the two approaches whereby, profits were diminishing regardless of the revenue obtained (Table 17 and 18). From these observations it follows that, calculating of GM using future value is more practical and farmers get a real value of the costs used for n years of rearing cattle.

On the other hand, the profit was extremely low when bull cattle were sold at six years of age (Table 17). The findings showed that only TShs 201 754 which equals to 40.35% of the value of sales on average in both districts were obtained. When the time factor was not considered, the sales were TShs 295 421 which is equal to 59.1%. However the assumption was the existence of constant prices over a range of time.

**Table 18: Gross margin analysis of a cow basing on future value**

<b>Monduli District</b>						
<b>Period (Years)</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
Cost (PV)	37 999.44	37 999.44	37 999.44	37 999.44	37 999.44	37 999.44
Compounding factor**	1.1088	1.2294	1.3632	1.5115	1.6759	1.8583
Future value (TVC per cattle)	42 133.78	46 716.51	51 800.84	57 436.15	63 683.26	70 614.36
Total Variable cost				198 087.28	219 636.76	332 384.90
Selling price				380 000.00	340 000.00	300 000.00
Gross margins (GM)TShs				181 912.72	120 363.24	-32 384.90
Gross margins as a % of sales				47.87	35.40	-10.79
<b>Longido District</b>						
<b>Period(Years)</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
Cost(PV)	30 193.49	30 193.49	30 193.49	30 193.49	30 193.49	30 193.49
Compounding factor**	1.1088	1.2294	1.3632	1.5115	1.6759	1.8583
Future value (TVC per cattle)	33 478.54	37 119.88	41 159.77	45 637.46	50 601.27	56 108.56
Total Variable cost				157 395.64	174 518.37	264 105.48
Average selling price (TShs)				380 000.00	340 000.00	300 000.00
Gross margins (GM)TShs				222 604.36	165 481.63	35 894.52
Gross margins as a % of sales				58.58	48.67	11.96
Average GM (TShs) in Monduli and Longido districts				202 258.54	142 922.43	1 754.81
Average % of sale in Monduli and Longido districts				53.23	42.04	0.58

\*\*Interest rate =10.88% and assumed to be constant for a calendar of six years

In the case of a cow, the trend of profit diminished for a sold cow to TShs 202 258.54 i.e. equals to 53.23% as a percentage of the sell for the 4 year on average (Table 18) comparable to 243 614 equals to 64.1% on the assumption of constant costs each year. In addition, a six year old cow sold earned only a GM of TShs 1 754 which is equals to only 0.58% as a percentage of a sell when time factor was used while TShs 95 421 equals to 31.8% as a percentage of a sale on the assumption of constant costs obtained each year. It is therefore affirmed that, time has a key role for the betterment or worseness of the economy of cattle keeper. Therefore, ignoring the time factor in the course of determining costs incurred by cattle keepers is not a proper way to calculate profit.

#### 4.4.2 Beef cattle traders' gross margins

Traders in the beef cattle supply chain in Monduli and Longido districts were involved in purchasing cattle from pastoralist/agro pastoralist through the primary markets. Beef cattle traders incur various costs, including market fees, labour costs (herder's wages), food, transport and cattle movement permits (Table 19).

**Table 19: Gross margins for beef cattle traders in Monduli and Longido districts**

The cost of buying and transporting one cattle	TShs per head	% TVC
Purchasing Price	450 000	94.20
Movement permit	1 500	0.31
Market fees	5 000	1.05
Transportation (Buying)	4 000	0.84
Transportation (Selling) to Meserani and Weruweru markets	10 000	2.09
Communication	100	0.02
Food	2 100	0.44
Labour (header wages) trekking	4 000	0.84
	1 000	0.21
<b>Total costs</b>	<b>477 700</b>	<b>100.00</b>
<b>Revenue from the sale of one cattle</b>		
Cattle selling price (bull)	550 000	
Gross margin	72 300	
Gross margin as a % of sales	13.1	

The findings show that, the cost of purchasing cattle was the most remarkable (95.20%) followed by transportation cost of 2.09 % of the total variable costs. The remaining costs were insignificant i.e. less than 1%. The GM was TShs 72 300 equals to 13.1% of the sales value on average. This shows that although traders seem to earn a small portion of profit compared to farmers, this amount is considerably higher because is a profit obtained per cattle per day (Table 19).



#### **4.4.3 Gross margins for butchery/meat shop operators**

Butchery /meat shop operators were found to be of two categories such that, there were some butcher men who bought live cattle in the markets (these were done in both primary and secondary markets) for slaughtering. The other category was those who bought the carcass from slaughter houses. On an average carcass bought were of 120kg per day at low season while in peak season (October, November and December) it was reported to be 200kg per day. Butchery/meat shop operators who purchase live cattle from the market incurred the following costs: Cost of purchase of live cattle, marketing (charges) fee, transportation costs, holding pen and slaughter fee. The second category of butchery/meat shops operators incurred the following costs: Purchasing price, holding pen fee, labour (salary for meat seller) and transportation costs (Tables 20 and 21).

##### **4.4.3.1 Gross margins for butchery/meat shop operators when buying live cattle**

As was the case for traders, the most important cost for butcher/meat shops operators came from purchase of beef cattle. This represented about 94.39 % of the total cost for the sample followed by labour or wage for butcher operators' i.e. 1.78%. The rest of the cost items were very small, less than 1% each as shown in Table 20. The study found further that butcher operators incur other costs like environmental cleanliness, official and unofficial contributions etc. Although these costs contributing to only 0.18% may be considered as not noteworthy, but affects the net returns of the butcher operators. The results shows that, an average daily GM of TShs 198 500 per animal which can generate a monthly income of TShs 5 955 000 per farmer *ceteris paribus*.

**Table 20: Gross margin analysis for butchery who buy live cattle**

<b>Costs</b>	<b>TShs per head</b>	<b>% of TVC</b>
<b>The Cost of buying and transporting one cattle (200Kg)</b>		
Purchasing Price (live cattle)	530 000	94.39
Buying /movement permit	1 500	0.27
Market (charges) fees	5 000	0.89
Transportation from market to slaughter area	5 000	0.89
Holding pen fee	2 000	0.36
Slaughtering fee	2 000	0.36
Transportation of meat from slaughtering to butchery	3000	0.53
Labour (meat seller)	10 000	1.78
Letting fee	2 000	0.36
Other costs	1 000	0.18
<b>Total costs</b>	<b>561 500</b>	<b>100.00</b>
<b>Revenue from the sale of one cattle</b>		
Carcass 100kg @6000 TShs	720 000	
Head	15 000	
Hide	5 000	
Offal and legs	20 000	
<b>Total Revenue</b>	<b>760 000</b>	
Gross margin	198 500	
Gross margin as a % of sales	26.12	

#### **4.4.3. 2 Gross margin for meat shop operators buying carcass**

The highest cost for this category was the cost of buying carcass from the slaughter houses which was TShs 5000 per kg followed by labour cost (wage). The item in the category referred to other costs was smaller amounting to TShs 1000 per cattle and representing only 0.13% of all costs incurred by the butcherers. On average quantity of carcass bought was 150kg, which accumulated a gross margin of TShs 130 500 per day and a total of TShs 3 915 000 per month *ceteris paribus* (Table 21).

**Table 21: Gross margins for butcherer purchasing carcass**

<b>Costs</b>	<b>TShs h per head</b>	<b>% of TVC</b>
Purchasing Price (Carcass) 150kg@5000	750 000	97.47
Holding pen fee	2 000	0.26
Transportation of meat from slaughtering area to butchery	4 500	0.58
Labour (Meat seller)	10 000	1.30
Letting fee	2 000	0.26
Other costs	1 000	0.13
<b>Total costs</b>	<b>769 500</b>	<b>100</b>
<b>Revenue from the sales of carcass</b>		
Carcass 150kg @6000	900 000	
Gross margin	130 500	
Gross margin as a % of sales	14.50	

The analysis shows that the largest share of gross margins is earned by butcher man/meat shops who generate an average gross margin of TShs 198 500 for those who purchase live cattle in the markets. Butcher men/meat operators who buy carcasses from slaughter houses earns a GM of TShs 130 500. These were followed by traders who earn a GM of TShs 72 300.

#### **4.5 Determinants of Beef Cattle Profitability**

Findings from regression analysis show that only 79% of the variations in beef cattle profitability are due to the independent variables included in the regression model (Table 22). This implies that the dependent variable (GM) is explained by the explanatory variable by 79%. The remaining 21% are factors that were not considered by the model (explains the error term).

**Table 22: Estimates based on regression model on factors influencing beef cattle profitability**

<b>Variables</b>	<b>Coefficients</b>	<b>Std. Error</b>	<b>VIF</b>	<b>Probability</b>
(Constant)	121 745.597	12 935.58	1.781	0.000
Age of respondent	3 002.444	3 819.551	1.498	0.434
Education level of respondent	13 072.506	4 096.355	1.770	0.002***
Information on Market	18 370.275	8 258.985	1.043	0.029**
Distance to markets	2 403.714	6 248.183	2.150	0.702
Experience (years)	10 619.716	5 090.397	1.957	0.041**
Access to veterinary services	72 078.363	8 560.050	1.169	0.000***
Access to credits	5 489.193	8 465.556	1.781	0.519
R	0.862			
R Square	0.790			
Adjusted R Square	0.766			

(\*\*\*) and (\*\*) Significant at 1% and 5% level respectively

The findings show that, education level of livestock farmers was statistically significant at  $P < 0.01$  and positively related to beef cattle profit margin. This suggests that farmers who have good education have higher chances of earning larger gross margin than those without or with low education level. Controlling for the effects of other variables, when the education level of the farmer increases by one year, GM increase by 13 072 TShs/cattle. A similar results was obtained by Barnos (2011) who found that education level of farmers was statistically significant at  $P < 0.01$  and positively related to GM.

The findings also show that information of beef cattle markets was statistically significant and positive at  $P < 0.05$  level. This implies that as a farmer keeps livestock farmers fed up with precise information on markets have chances of earning larger gross margin than those farmers who do not have enough information on the market. A unit increase in market information for livestock farmers, increased GM by 18 370 TShs/cattle *ceteris*

*paribus*. In respect to this, market information seems to help cattle keepers to better negotiate for a higher price for their cattle resulting in selling their herd profitably.

Moreover, the experience was statistically significant at  $P < 0.05$  and positively related to gross margin. This suggests that farmers with high experience have got higher chances to earn larger gross margin than those farmers with low experience. If the experience in keeping cattle of the farmer increases by one year, GM increase by 10 619 TShs/cattle *ceteris paribus*. Nganga *et al.* (2010) found that, farmers who have more experience tend to exhibit higher levels of profit efficiency because of technical know-how which is influenced by being in the field for a long time.

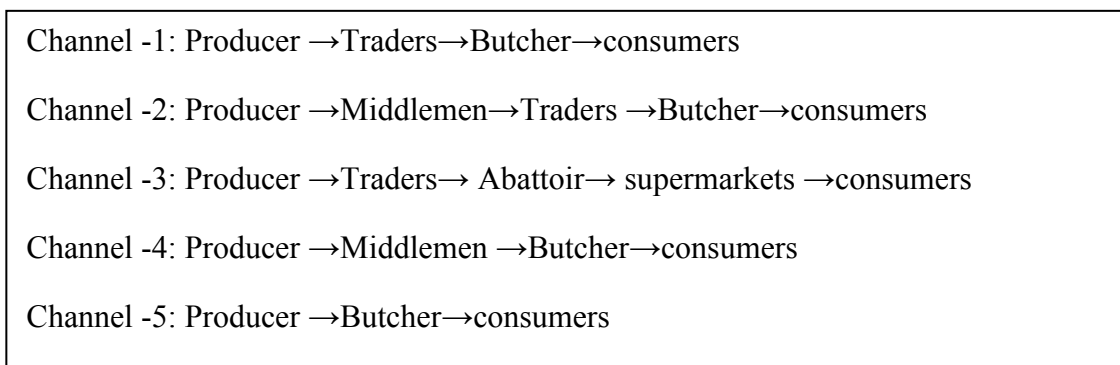
Access to veterinary services received by the livestock farmers was also significant at  $P < 0.01$  and positive related to GM. This implies those farmers who receive veterinary services from extension officers have higher chances of earning larger profit than other farmers who do not have adequate extension services. Keeping the other variables constant, farmers who get veterinary services earn a gross margin of 72 078 TShs/cattle more income than those who do not get the service.

#### **4.6 The Distribution of Beef Cattle Marketing Channels**

The study findings also reveal that there were five (5) prevalent beef cattle marketing channels. Beef cattle marketing channels surveyed in the two districts are characterized by small holder pastoralists and agro pastoralists, whereby most livestock produced are marketed by private entrepreneurs (small scale and large traders) operating as a marketing chain, collect, regroup and distribute the livestock to primary, secondary and terminal markets. The market actors in the beef cattle marketing channels were livestock

producers, traders, butchers/ meat shops, hotels/supermarkets, processors and consumers which are the end users of the beef.

As it is portrayed in Figure 6, channel II and channel IV are more common in both primary and secondary markets. Channel II and IV dominate in the market due to the presence of many middlemen in the markets. Channel I is more efficient than other channels. However, channel I and channel IV are more preferable because livestock farmers sell their cattle directly to traders and would maximize profit to the producer.



**Figure 8: Marketing channels in Longido and Monduli districts**

#### **4.7 Marketing Efficiency of Beef Cattle under Different Marketing Channels**

The marketing efficiency of beef cattle under different marketing channels in Monduli and Longido district are presented in Table 23. A clarification on how marketing costs and marketing margins computed in Kg is found in appendix 1. When calculated using Acharya's method (i.e. price received by the farmers divided by the total marketing cost and margin); it was found to be highest in the channel I (2.5); followed by channel II (2.2) and then channel IV (2.0). The findings show that market efficiency decreases as the marketing costs and/or margins of intermediaries in the marketing channel increases and vice-versa.

**Table 23: Measurement of marketing efficiency of beef cattle**

S/N	Particulars	Marketing channels				
		I	II	III	IV	V
1	Consumer price (CP)	6 000	6 000	9 000	6 000	6 000
2	Total marketing cost (MC)	870	1 070	1 848	840	523
3	Total margins of intermediaries (MM)	850	795	2 825	1 200	1 677
4	Price received by farmers (FP)	4 327	4 135	4 327	4 135	3 800
<b>Index of Marketing Efficiency</b>						
	Acharya's method (MME) = $[4/(2+3)]$	2.5	2.2	0.9	2.0	1.7

These findings correlate with those of Addisu *et al.* (2012) who studied beef and feed value chain in Adama district, Ethiopia and found that beef marketing in Adama district consisted of three channels. The study revealed further that, marketing margin of a particular marketing agent was an indicator of the efficiency of the channel i.e. the lower the marketing margins the higher the efficiency.

#### **4.8 Major Production Challenges of Beef Cattle in Longido and Monduli Districts**

The challenges faced by farmers in the production of beef cattle were almost similar in Monduli and Longido districts. The major production challenges were presence of drought (shortage of water and pastures), prevalence of diseases like (Vector borne diseases (ticks and borne), epidemic diseases such as Lumpy Skin, Hemorrhagic Septicaemia, Anthrax (Black Quarter), Contagious Bovine Pleuropneumonia (CBPP and CCPP), Brucellosis, East Coast Fever (ECF), Anaplasmosis, Heart Water and Babesiosis. Others are high costs of drug, presence of wild animals and theft of cattle, presence of expired/fake drugs, lack of fund and inadequate cattle dipping facilities.

#### 4.9 Major Marketing challenges of Beef Cattle in Longido and Monduli Districts

Beef cattle keepers were assessed in terms of marketing challenges they faced. Their responses are presented in Table 24. The findings show that the main marketing challenges identified by most of the beef cattle keepers in Monduli and Longido District were: lack of market information, low prices of cattle, unreliable markets and low number of buyers in primary markets. Other challenges were absence of weighing machines in primary markets, absence of farmers associations and the problem of market infrastructures (Table 24).

**Table 24: Marketing challenges facing livestock farmers in Monduli and Longido districts**

Marketing challenges	District		Average (%)	Rank
	Monduli (%)	Longido (%)		
Lack of market information	94.0	80.0	87.0	1
Lower price of cattle	82.0	88.0	85.0	2
Unreliable markets	80.0	77.5	78.7	3
Absence of weighing machines	55.0	70.0	62.5	5
Problem of market infrastructure	30.0	35.0	32.5	7
Low number of buyers	70.0	64.0	67.0	4
Absence of farmers associations	45.0	55.0	50.0	6

#### 4.10 Major Challenges Facing Traders

The findings show that the major trading challenges mentioned by traders in the two districts were unreliable markets (price fluctuation), inadequate capital and lack of credit facilities, getting loss in business (less returns), low grade cattle in the market (emaciated cattle/sick). Other challenges are taxes (levies) in the market, inadequate market infrastructure and cost of transportation of cattle.



**Table 25: Major challenges facing traders**

Marketing challenges	District		Average (%)	Rank
	Monduli (%)	Longido (%)		
Inadequate capital and lack of credit facilities	95.0	80.0	87.5	2
Unreliable markets (price fluctuation)	90.0	90.0	90.0	1
More taxes (levies) in the market	70.0	55.0	62.5	5
Market infrastructure	60.0	40.0	50.0	6
Getting loss in business (Less returns)	75.0	75.0	75.0	3
High cost of cattle transportation	35.0	35.0	35.0	7
Low grades of cattle in the market (emaciated cattle/sick).	70.0	60.0	65.0	4

However, through discussion with the key informants in both Meserani and Them (Rokii) secondary markets, it was revealed that in secondary markets weighing machine facilities exist but, none of the buyers or sellers are willing to use them. Sometimes the machines have been vandalized to avoid their use. A particular example is the weighing machine at Them-Rokii. The weighing machine at Meserani secondary market is also not working. Both buyers and sellers in secondary markets think that they do benefit if they conduct their business by physical observation. Thus, proper education on the importance of using weighing machines and enforcing their use is essential for proper business conduct in the beef industry in Tanzania.

#### **4.11 Trading Challenges Facing Butcherers**

The researcher assessed the challenges faced by butcher men in Longido. The findings show that the major trading challenges mentioned by Longido butcher men were inadequate capital and lack of credit facilities, high operational costs, low number of buyers, lack of skills on business planning and management and shortage of equipments for handling, grading and cutting. Other challenges were poor or lack of meat storage facilities and higher levies imposed to butcheries/meat shops.

**Table 26: Trading challenges facing butcherers**

Marketing challenges	District		Average (%)	Rank
	Monduli (%)	Longido (%)		
In-adequate capital and lack of credit facilities	94.0	90.0	92.0	1
High operational costs	80.0	80.0	80.0	2
low number of buyers (Few customers)	70.0	60.0	65.0	4
higher levies imposed to butcheries/meat shops	40.0	50.0	45.0	6
shortage of equipments for handling, grading and cutting	50.0	70.0	60.0	5
Lack of skills on business planning and management	64.0	70.0	67.0	3
Poor meat storage facilities	30.0	40.0	35.0	7

## CHAPTER FIVE

### 5.0 CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Conclusions

The study determined beef cattle value chains so as to identify potential area for intervention in order to improve livestock keepers' access to markets in Longido and Monduli districts. Specifically, the study mapped beef cattle value chains in Longido and Monduli districts; evaluated profit obtained by different actors along the chain; determined factors influencing beef cattle profitability for livestock keepers in the study area and determined marketing efficiency in various beef cattle marketing chain segments. The study also identified challenges faced by actors in beef cattle value chains.

The first objective was to map beef cattle value chains in Longido and Monduli districts. The findings show that actors were livestock keepers, traders, butchers, hotels/supermarkets, consumers. Also the study found that some actors were involved in more than one activity. Both formal and informal channels were operating in sale of cattle.

The second objective was to determine profit obtained by various actors along the various nodes in the value chains. Results showed that farmers received the lowest GM and butchers received the highest GM in the chain. The low GM earned by the primary producers were attributed to higher cost of drugs/medication, uncoordinated markets and lack of community information system centers.

The third objective was to analyse the determinants of beef cattle livestock keepers' profitability in Longido and Monduli districts. The findings show that profitability was determined by experience, education level, information on market and availability of veterinary services.

The fourth objective was to analyse the marketing efficiency in various beef cattle marketing chains/channels. The result obtained show that market efficiency in all the sub-sectors decreases as the marketing costs and/or margins of intermediaries in the marketing channel increases and vice-versa. This was due to lack of sufficient market awareness to livestock keepers to take hold of better market prices.

The fifth objective was to identify challenges faced by actors in beef cattle value chains. The findings show that the beef cattle Subsector is faced with both production and marketing challenges that hinder the development of a sustainable and a profitable value chain. Thus, beef cattle value chain sustainability will highly depend on the reduction or elimination of the challenges that face livestock farmers, traders and butchers/meat shops.

## **5.2 Recommendations**

### **5.2.1 Recommendation to beef cattle chain actors**

Based on the findings of the study, the following recommendations are suggested for the improvement of pastoralists' participation in cattle marketing and development of sustainable beef cattle value chain.

#### **5.2.1.1 Improving livestock husbandry**

Poor livestock husbandries such as lack of efficient veterinary disease control and extension services were found to contribute to poor quality of cattle. To improve the

quality of cattle raised in the study area, the study recommends the improvement of veterinary and extension services promote commercialization of livestock keeping and better business opportunities so as to generate higher incomes.

#### **5.2.1.2 Strengthening and formation of new actors associations**

Most of the actors at various stages in the value chain were poorly organized or were not organized at all. Where organization exists, they were weak; effort should be made through Public Private Partnership (PPP) to train actors on group cohesion, marketing and leadership skills. Where associations are absent, efforts should be made to promote their establishment.

#### **5.2.1.3 Strengthening vertical coordination between actors in the value chain**

The study found weak coordination or linkage between actors along beef cattle value chain in the study area. Informal contracts were found to exist between livestock keepers and middlemen, middlemen and traders. The study recommends the strengthening of the existing contractual agreement between livestock keepers, traders and butchers owners by facilitating the formulation of formal legal contracts. Where no links exist, effort should be made to facilitate their formulation by organizing meeting where they can discuss issues of mutual benefit in cattle trading.

#### **5.2.1.4 Enforcement of existing laws and regulation**

At all stages of the beef cattle value chain only the butcher men graded and sold meat, although the laws and regulations governing livestock state clearly all cattle should be sold upon use of weighing machines. To improve high quality and obtain high prices of cattle, the study recommends strict enforcement of existing laws and regulation governing

cattle trade, particularly on husbandry practices, slaughtering and abattoir operation and the likes.

#### **5.2.1.5 Market information dissemination**

The study found weak or no information on livestock markets and therefore farmers forced to go to market and sell upon the buyer prices decision. To improve market information on both livestock keepers and traders, the study recommends that dissemination of market information through all possible mass media for the benefit of the livestock farmers and all beef cattle value chain actors by strengthening community information system controls is inevitable.

#### **5.2.2 Recommendation to the policy makers**

This study recommends the Government to set policies and strategies in order to enhance livestock keepers and small scale market agents participate fully in livestock markets. This can be done through establishing new (or amendment of existing) acts and guidelines in order to foster the livestock sector industry.

#### **5.2.3 Recommendations for further research**

This study, conducted a research on marketing efficiency, therefore separate studies on allocative and technical efficiency in the beef cattle value chains can be conducted to give an in-depth analysis of livestock in the study area.

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## APPENDICES

Appendix 1: Marketing costs and marketing margins of beef cattle per Kg

Group of market players	Cost/Profit item	Marketing Channels				
		I	II	III	IV	V
Middlemen	Purchasing price	-	4,135	-	4,135	-
	Communication	-	50	-	50	-
	other costs	-	150	-	150	-
	<b>Marketing Costs (MC)</b>	-	<b>200</b>	-	<b>200</b>	-
	<b>selling price</b>	-	<b>4,500</b>	-	<b>4,800</b>	-
	<b>Marketing margin</b>	-	<b>165</b>	-	<b>465</b>	-
Traders	Purchase Price	4,327	4,500	4,327	-	-
	Movement permit	15	15	15	-	-
	Market fees	48	48	48	-	-
	Transport	115	115	115	-	-
	Transportation of cattle to Meserani/Weruw eru	77	77	77	-	-
	Communication	10	10	10	-	-
	Other costs	22	22	22	-	-
	Labour charge	20	20	20	-	-
	<b>Marketing Costs (MC)</b>	<b>306</b>	<b>306</b>	<b>306</b>	-	-
	<b>selling price</b>	<b>5,090</b>	<b>5,090</b>	<b>5,090</b>	-	-
	<b>Marketing margin</b>	<b>457</b>	<b>284</b>	<b>457</b>	-	-
Butcher men	Purchase Price	5,090	5,090	-	4,800	3,800
	Movement permit					

		15	15	-	15	-
	Market fees	48	48	-	48	-
	Transport	38	38	-	38	50
	Communication	10	10	-	10	20
	Slaughtering fee	96	96	-	96	96
	Electricity	16	16	-	16	16
	Transport from slaughtering slabs to butchery	29	29	-	29	29
	Lenting fee	16	16	-	16	16
	Labour(Meat seller)	96	96	-	96	96
	Other costs	200	200	-	200	200
	<b>Marketing Costs (MC)</b>	<b>564</b>	<b>564</b>	-	<b>564</b>	<b>523</b>
	<b>seling price</b>	<b>6,000</b>	<b>6,000</b>	-	<b>6,000</b>	<b>6,000</b>
	<b>Profit margin</b>	<b>346</b>	<b>346</b>	-	<b>340</b>	<b>1,727</b>
Abattoir	buying price	-	-	5,090	-	-
	Electricity	-	-	100	-	-
	Preservatives	-	-	120	-	-
	Labour	-	-	150	-	-
	Transportation	-	-	60	-	-
	Packaging materials	-	-	12	-	-
	other costs	-	-	300	-	-
	<b>Marketing Costs (TMC)</b>	-	-	<b>742</b>	-	-
	<b>seling price</b>	-	-	<b>8,000</b>	-	-
	<b>Marketing margin</b>	-	-	<b>2,168</b>	-	-
Supermarkets	buying price	-	-	7,000	-	-
	Electricity	-	-	200	-	-

	Council levy	-	-	100	-	-
	Casual labour	-	-	100	-	-
	other costs	-	-	400	-	-
	<b>Marketing Costs (MC)</b>	-	-	<b>800</b>	-	-
	<b>selling price</b>	-	-	<b>9,000</b>	-	-
	<b>Marketing margin</b>	-	-	<b>1,200</b>	-	-
<b>Consumer</b>	<b>Consumer Price</b>	<b>6,000</b>	<b>6,000</b>	<b>9,000</b>	<b>6,000</b>	<b>6,000</b>

## **Appendix 2: Household Questionnaire on livestock farmers on beef marketing**

### **SECTION A: BACK GROUND INFORMATION**

Contact details of the farmer: Mobile number.....

Questionnaire Number.....

Date of interview .....

Name of respondent .....

Age of respondent.....

Education level of respondent 1=No formal education [ ] 2=Primary education [ ]

3= Secondary education [ ] 4=College education [ ]

District .....Ward..... Village/Street .....

1. What is your primary occupation? 1= Wage employment [ ] 2= cattle keeping [ ]

3= Business [ ]

2. What is your secondary occupation?

1= Wage employment [ ] 2= Cattle keeping [ ] 3= Business [ ] 4= Crop production [ ]

5= others (specify) [ ]

### **SECTION B: BEEF CATTLE PRODUCTION INFORMATION**

3. What is the current size of the herd you keep?

4. What is the opinion of the family on the future size of the beef cattle production?

1= to expand [ ] 2= to reduce [ ] 3= to maintain as it is [ ] 4= other.... specify [ ]

5. For what purpose do you rear beef cattle? 1= for prestige [ ] 2= way of life [ ] 3= store of wealth [ ]

4= security/insurance [ ] 5= Food 6= source of income [ ] 7= commercial purpose [ ]

6. For how long have you been keeping these cattle (years) .....

7. What is the main source of labour used in beef cattle production?

1= Family [ ] 2= Hired [ ] 3= both family and hired [ ]

9. Variable inputs for each beef cattle (Please fill the table below)

Variable costs	Unit of measurement	Frequency (Twice a week or a month)	Unit cost	Total cost/per year
Commercial Minerals				
Labor for herding				
Drugs/medication				
De-worming				
Dipping/Spraying				
Veterinary/breeding services				
Water				
Others (Specify)				

10. Do you access veterinary services? 1=Yes [ ] 2=No [ ]

11. If yes, how often 1= very frequently [ ] 2= frequently [ ] 3= Less frequently [ ]

12. If No give reasons.....

13. Do you consider veterinary services adequate? 1=Yes [ ] 2= No [ ]

13. Why do you consider that veterinary services not adequate?

1=long distance to find veterinary centres (shops) [ ]

2=some drugs have expired or are fake [ ]

3=livestock officers do not visit farmers due the large area of the villages [ ]

4=Presence of chronic diseases [ ]

14. Do you have access to credits 1= Yes [ ] 2= No [ ]

15. If yes, name the institution from which you access the credits

1= Commercial banks [ ] 2=SACCOs [ ] 3= Microfinance [ ]

4 = others (specify) [ ]

16. If No, why .....

17. What are the production constraints do you face in keeping your cattle?

1=Drought (shortage of water and pastures) [ ]

2=High costs to buy cattle drugs [ ] 3=Lack of Fund [ ]



4=Expired or fake cattle drugs [ ]

5=Drugs centres are found far away from residential areas [ ]

6=Presence of wild animals [ ] 7=Theft of livestock[ ] 8=Prevalence of diseases [ ]

9=Few cattle dipping facilities in some areas [ ] 10=Lack of credit facilities [ ]

**SECTION C: MARKETING COSTS**

18. Frequency of market days (at primary markets)

1=Once per week [ ] 2= Twice per week [ ] 3= Once per month [ ]

4= Twice per month [ ] 5= any other (specify)..... [ ]

19. Please indicate marketing costs you face when you need to sell your cattle

Cost item	Frequency (e.g twice a week)	Costs (TSH)	Total variable cost per year
Labour (loading and unloading)			
Transportation cost			
Hidden cost (waiting time, etc.)			
Communication			
Market charges			
Others (specify)			

**SECTION D: MARKETING INFORMATION**

20. On average how many beef cattle do you sell per month? .....

21. How many cattle (number) have you sold per month?

(Please Specify per each outlet)

1=Auctions..... [ ].. 2= Abattoirs...[ ] 3 = Direct to butcher..... [ ]

4= Middlemen..... [ ].. 5= Traders.....[ ].. 6 = Farmer cooperatives..... [ ]..

7= others (specify) ..... [ ]

22. Where do you normally sell your cattle?

1= Auctions [ ] 2= Abattoirs [ ] 3= Middlemen [ ] 4= Traders [ ] 5. Butchery

6=others (specify) [ ]

23. Which market do you prefer among the following?

1= Butchery [ ] 2= Primary market [ ] 3=Secondary market [ ] 4= Abattoirs [ ]

5=Other (specify) [ ]

24. Why do you prefer that market 1=use of weighing facilities [ ]

2=It is nearby the livestock farmers 3=Good environment for selling [ ]

4=No other alternative market [ ] 5=No other alternative market [ ]

6=others.....specify [ ]

25. What criteria do you use to sell your cattle.....

1=Sick animal [ ] 2= When cash constrained [ ] 3= Others (specify)..... [ ]

26. Please fill the table below?

Type of cow/Cattle	Quantity/ Number	Low peak Price (Tsh)	Highest peak Price (Tsh)	Average price (Tsh)
Large bull				
Medium size				
Large Heifer				
Medium size				
Large Steer				
Medium size				

27. Who set the price for the cattle sold? 1=Buyer [ ] 2=Seller [ ] 3=others (specify).... [ ]

28. How do you arrive to the final price per unit? 1=Negotiations [ ] 2= Price fixed by a buyer [ ]

3=Price fixed by a seller (farmer) [ ]

29. How do you fix prices of beef cattle?

1=Take market prices [ ] 2=calculate cost involved [ ] 3=Other (specify)..... [ ]

30. Are you aware of prices prevailing in the nearby market? 1=Yes [ ] 2=No [ ]

31. Do you know price in advance before taking your consignment to the market ?

1= Yes [ ] 2=No [ ]

32. What factors are considered in setting up the price of animals? (Please rank

1= Weight [ ] 2= Age [ ] 3= Breed [ ] 4= Observation of physical condition [ ]

5= others (specify) [ ]

33. Are you satisfied with the current beef cattle prices? 1= Yes [ ] 2= No [ ]

34. If no why 1=price is low [ ] 2=operational costs are very high [ ]

3=No unit of measure the weight of cattle [ ]

4=buyers offers price which are in their favour [ ] 5= others (specify) [ ]

34. What was the mode of the trade?

1=Contract sale [ ] 2=First come /first served [ ] 3= others (specify) [ ]

35. Do you have any contractual arrangement with buyers of your beef cattle?

1= Yes [ ] 2= No [ ]

36. If yes, what kind of contract? 1= Formal [ ] 2= Informal contracts [ ]

37. If No, why.....

38. How do you get information on market and price for beef cattle?

1= through friends/fellow cattle farmers [ ] 2= Radio/news paper [ ]

3= Direct visit to the markets [ ] 4= Traders [ ]

39. Are there any constraints/ challenges you face in marketing your cattle?

1= Yes [ ] 2= No [ ]

40. If yes, what are these constraints?

1= Unreliable markets (price fluctuation) [ ]

2= Low price of cattle comparing to raring costs [ ]

3= the process of selling cattle consumes more time [ ]

4= low numbers of buyers in the market [ ]

5= Lack of market of market information [ ]

6= Absence of weighing machines in primary markets [ ]

7= Problem of market infrastructure [ ]

8= Absence of farmers association [ ]

41. What do you think that can be done to overcome such challenges? [ ]

.....  
.....  
.....

**SECTION E: BUSINESS DEVELOPMENT AND SUPPORT SERVICES**

42. Have you received any business or technical training? 1= Yes [ ] 2= No [ ]

43. If yes, when and what were the contents?

44. Who were the providers of that training?

45. Did you incur any cost in attending that training? 1=Yes [ ] 2=No [ ]

**SECTION F: REGULATIONS**

46. Are there any regulations/laws/rules set by the authority toward beef marketing?

1=Yes [ ] 2=No [ ]

47. If yes in Question 46, what are they? (Mention)

.....  
.....  
.....

48. What are the effects of these regulations on beef cattle production and marketing?

**THANK YOU FOR YOUR COOPERATION**

**Appendix 3: Traders questionnaire**

Name and mobile contacts.....

Name of trader (Retailer, Wholesaler, Middlemen etc ).....

District ..... Ward.....Village/street.....

1. Type of trade involved

1= Whole seller [ ] 2= Retail [ ] 3= Middlemen [ ] 4 = others (specify) [ ]

2. What is the source of beef cattle you sell? 1= Livestock keeper [ ] 2=Ranches [ ]

3=Trader [ ] 4=Retail [ ] 5= other (specify) [ ]

3. How many years have you been in this business .....

4. Indicate how you purchase cattle according to size and season

Type of cow/Cattle	Number of cattle	Low peak price (Tsh)	Highest peak price (Tsh)	Average price (Tsh)	Frequency of (e.g. 2 times per month)	Total cost per month
Large bull						
Medium size						
Large Heifer						
Medium size						
Large Steer						
Medium size						

5. On average how many cattle do you purchase per month?.....

6. Is there any variability in the volume of cattle you buy between seasons

1=yes [ ] 2=No [ ]

7. If yes, which month do you buy more or less cattle?

More cattle (months) .....

Less cattle (months).....

8. What was the mode of payment?

1 = Cash [ ] 2 = Credit [ ] 3 = Other (Specify [ ]

9. Who sets the price of cattle?

1=Seller [ ] 2= Buyer [ ] 3= both buyer and seller 4= others (specify) [ ]

10. What factors are considered in setting the price?

1=Supply and demand forces [ ] 2= Quality grades [ ]

3= observation of the physical condition [ ] 4=Breed [ ] 5=Weight [ ] 6=others  
(specify)[ ]

11. How do you fix prices of beef cattle?

1=Take market prices [ ] 2=Calculate cost involved [ ]

3=other (specify)..... [ ]

12. Do you know price in advance before taking your consignment to the market?

1=Yes [ ] 2=No [ ]

13. What are the means of transport do you use?

1=on treks [ ] 2=By Trucks [ ] 3 = others (specify) [ ]

14. Please provide details of your costs you have incurred in your business last year 2013

<b>Cost item</b>	<b>Number</b>	<b>Frequency of (e.g. 2 times per month)</b>	<b>Cost (TShs)</b>	<b>Total cost per month</b>
Labour (loading and unloading)				
Transportation of cattle				
Casual labour				
Market charges				
Communication				
Losses of animals (deaths)				
Market fee				
Movement permit (buying)				
Transportation (Buying)				
Herders wages(labour)				
Treatments				
Feeds				
Food				
Movement permit (selling)				
Others (specify)				

15. What is the average distance from the area where you buy cattle? ..... Km...

16. If by truck, do you share this mode of transport with others traders?

1 = Yes [ ] 2 = No [ ]

17. How do you share the costs?

1 = by weight/ volume [ ] 2 = per trip [ ] 3 = equally irrespective of size/volume [ ]

4 = per distance [ ] 5 = number of animals [ ] 6= Other (Specify) [ ]

18. Where/to whom do you sell cattle? (Rank)

1 = Wholesalers [ ] 2=Industrial processors [ ] 3 =Retailers [ ]

4=trader [ ] 5=butcher dealer 6 = Other (Specify)..... [ ]

<p>19. Do you have any contractual agreement with suppliers of products? 1 = Yes [ ] 2 = No [ ]</p>	<p>20. Do you have any contractual agreement with buyers of products? 1 = Yes [ ] 2 = No [ ]</p>
<p>21. If yes, please indicate the kind of agreement? 1 = formal contract [ ] 2 = informal contracts [ ]</p>	<p>22. If yes, please indicate the kind of agreement? 1 = formal contract [ ] 2 = informal contracts [ ]</p>
<p>23. What does the contract specify? <input type="checkbox"/> Price..... <input type="checkbox"/> Quality..... <input type="checkbox"/> Time.....</p>	<p>24. What does the contract specify? <input type="checkbox"/> Price..... <input type="checkbox"/> Quality..... <input type="checkbox"/> Time.....</p>

25. What is the average transport cost per animal..... TShs

26. How do you normally get pricing information?

1= Direct visit to the markets [ ] 2= fellow traders [ ] 3= newspapers [ ]

4= radio/TV [ ] 5= others (specify) [ ]

27. What are the criteria used in setting prices?

1= Cost incurred [ ] 2=supply and demand forces [ ] 3= others (specify) [ ]

28. Indicate how you sell cattle according to size and season

Type of cow/Cattle	Number of cattle	Low peak (TShs)	Highest peak (TShs)	Average price (TShs)	Frequency of (e.g. 2 times per week)	Total cost per month
Large bull						
Medium size						
Large Heifer						
Medium size						
Large Steer						
Medium size						

29. Have you ever accessed to formal credits? 1=Yes [ ] 2= No [ ]

30. If yes, name the institution where you access the credit

1=Commercial banks [ ] 2= SACCOs [ ] 3= Microfinance [ ]

4=others (specify) [ ]

31. If you have not accessed loan/credits from financial institutions what are the reasons?

1=No collateral [ ] 2=No need for a loan [ ]

3=loan repayment is difficult [ ]

4=Many procedurals to get loan [ ]

5=No enough information on how to get loan [ ]

6=livestock markets are not reliable, it is easy to get loss [ ]

32. Are you a member of any trade organization? 1= Yes [ ] 2= No [ ]

### **SECTION E: BUSINESS DEVELOPMENT AND SUPPORT SERVICES**

33. Have you received any business or technical training? 1=Yes [ ] 2= No [ ]

34. If yes, when and what were the contents?

35. Who were the providers of that training?

36. Did you incur any cost in attending that training? 1=yes 2=No



**SECTION F: REGULATIONS**

37. Do you know any regulation/laws/rules set by the authority toward beef marketing?

1= Yes [ ] 2=No [ ]

38. If yes in Question 44, what are they? (Mention)

.....  
.....

**SECTION G: GENERAL OBSERVATION**

39. What challenges are you facing in your business?

1=problem of market infrastructure [ ] 2=low capital [ ]

3=Beef cattle Affliction to traders when they sell outside the country [ ]

4=lost of cattle from or way to the market [ ]

5=price fluctuation [ ] 6= low graded cattle in the market (emaciated cattle) [ ]

7=some cattle are sent to the market when sick [ ] 8=unreliable markets [ ]

9=Transportation of cattle on trek is a tedious work [ ]

10=death of cattle on a way from the market [ ] 11=theft of cattle [ ]

12=getting loss in business (less returns) [ ] 13=others (Specify) [ ]

40. What suggestions do you recommend to the government to reduce the challenges encountered in your business?

**THANK YOU FOR YOUR COOPERATION!**

**Appendix 4: Hotels/ Supermakets questionnaire**

**SECTION A: BACK GROUND INFORMATION**

Questionnaire No.....

Date of interview .....

Name of respondent.....

Mobile contacts/e-mail.....

District..... Ward ..... Street .....

1	Name of Hotel /Supermarket	
2	Years in business	
3	A type of beef bought	1= High grade [ ] 2= Normal beef [ ] 3= Both high grade and normal beef [ ]

**SECTION B: MARKETING AND MARKER INFORMATION**

4. Do you purchase directly beef in the market place or do you have contractual agreement with a supplier 1=directly in the market [ ]

2=contractual agreement [ ] 3=Both Market place and contractual agreement [ ]

5. If agreement, who is your main supplier of beef? 1= Abattoir [ ]

2= Butchery [ ] 3= Imported [ ] 4= both imported and local (butchery) [ ]

5= other (specify) [ ]

6. If imported from where ..... (Country)

7. If imported why? .....

8. How many Kilograms do you purchase per per week? .....

9. How much do you pay suppliers for this lot? .....Sh/kg

10. What is the single most important quality attributed do you consider to judge quality beef? 1= Tenderness (flavor, juiciness, palatability and texture) [ ]

2= Color [ ] 3=Fat distribution [ ] 4= others (specify)..... [ ]

11. Who are your main customers? 1= Tourists [ ] 2= Local markets [ ]  
 3= both tourists and local markets [ ] 4= other (specify) [ ]
12. What do your customers say about your product? 1= Good product [ ]  
 2=Normal [ ] 3= Needs more improvement [ ] 4= others (specify) [ ]
13. How do your customers react towards prices 1= Price is high [ ]  
 2= Price is affordable [ ] 3= other (specify) [ ]
14. What are other substitute goods do you sell in your hotel/supermarket  
 1= Chicken and fish [ ] 2=Chicken [ ] 3=Pork [ ] 4=Fish [ ]  
 5= Chicken, fish and pork [ ] 6= others (specify) [ ]

### SECTION C: PRICE VARIABILITY

15. When do you sell more beef? Give possible months.....
16. Give possible reasons 1=High pick in tourism period [ ]  
 2=after harvest period of crops [ ]  
 3= High money circulation within people [ ] 4=other (specify) [ ]
17. In which period of the year do you sell less beef? Give possible months.....
18. Why do you sell less beef ? 1=Low peak in tourism [ ]  
 2=Paying school fees to pupils [ ] 3= other [ ]
19. In your opinion has the demand for quality beef increased or decreased in the  
 Past two years? 1= Increased [ ] 2=decreased 3= remained constant [ ]
20. In the past one year are there any changes in the quality of beef received/bought  
 1=Yes [ ] 2= No [ ]
21. If yes, what are the changes 1=Compliance to hygiene and safety standards [ ]  
 2= Abiding to rules/regulations set by the Local Government Authority [ ]  
 3= Good cutting and grading [ ]  
 4= Construction of modern butcheries/meat shops [ ]

99 =Not applicable [ ]

22. What pricing strategy do you use? 1= Cost based [ ] 2=competition based [ ]

3=both Cost based and competition based [ ] 4= other (specify) [ ]

23. Is demand for beef higher than that of substitutes? 1=Yes [ ] 2= No [ ]

25. What challenges do you face in supplying of quality beef?

1=Few customers who consumes beef in low peak period [ ]

2=some diseases are associated with red meat [ ]

3= some of the fillet steak have no required thickness [ ]

4= Lack of constant supply of quality beef in a year [ ]

26. In your opinion, what needs to be done to improve supply of quality beef in the country?

1=construction of modern butchereries [ ]

2= Livestock keepers to be advised on modern farming [ ]

3= Cross breeding between traditional and Exotic breeds [ ]

4= Land for grazing should be used at maximum utilization [ ]

5= National Ranches need to be restored and enabled to produce high quantity [ ]

6= Fattening of cattle to improve the cattle quality [ ]

**THANK YOU FOR YOUR COOPERATION!**

**Appendix 5: Butcher/Meat shops questionnaire****SECTION A: BACK GROUND INFORMATION**

Questionnaire No.....

Date of interview .....

Name of respondent.....

Contacts mobile/e-mail.....

Village/Street.....

Ward..... District .....

Name of butchery/ meat shop (optional)

**SECTION B: MARKETING INFORMATION AND MARKET CONDITION**

1. Years in business.....number of years
2. What is the source of beef you sell 1=Ranches [ ] 2=Traditional cattle [ ]  
3= Imported [ ] 4=Both local and imported [ ] 4=Other..... (specify) [ ]
3. If imported from where ..... (Country)
4. A type of beef you sell 1=Quality beef[ ] 2= Normal beef [ ]  
3= both quality and normal beef 4=others..... (specify) [ ]
6. Do you sell other meat substitutes? 1=yes [ ] 2=No [ ]
7. If yes, what other meat substitutes to beef do you sell?  
1= Chicken [ ] 2= Fish [ ] 3=goat meat [ ] 4=pork [ ] 5=both chicken and fish [ ]  
6=both goat and Chicken [ ] 7=chicken, fish and goat [ ]
8. What quantity in Kilogram of quality beef do you sell per week?
9. What is the single most important quality attributed do you consider to judge quality beef?  
1= Tenderness (flavor, palatability and texture) [ ]  
2= Color [ ] 3=Fat distribution [ ] 4=juiciness [ ]

11. Who are your main customers? 1= Tourists [ ] 2= Households [ ]  
 3=Hotels/restaurants [ ] 4=both households and hotels/restaurants [ ]  
 5= both households and supermarkets [ ] 6= Others (specify) [ ]

12. What price do you charge per unit? TSH/Kg

- Steak.....
- Mixed .....
- Liver .....
- Other (specify).....

13. How your customers react towards beef prices? 1= high price [ ]

- 2=low Price [ ] 3= Reasonable price [ ] 4= Other (specify) [ ]

14. What do customers say about your product and services? Give possible opinions

- 1= Good product [ ] 2=Normal beef [ ] 3= Needs improvement [ ]  
 4=others (specify) [ ]

**SECTION C: INCOME SOURCES AND EXPENDITURE**

15. Please indicate type of beef sold in the last week

<b>Beef and beef products sold during the last week</b>	<b>Unit of measure(Kg)</b>	<b>Number sold</b>	<b>Unit price (TShs)</b>	<b>Total revenue/week</b>
Beef cuts				
Fillet steak				
Steak				
Mixed				
Other (Specify)				

**SECTION D: PRICE VARIABILITY AND MARKET CONDITION**

16. When do you sell more beef? Give possible months

.....  
.....

17. What are the reasons for more sales in those periods?

- 1=High money circulation within people [ ] 2=after harvest of crops [ ]
- 3=festivals periods [ ] 4=others (specify) [ ]

18. In which period of the year do you sell less beef? Give possible months

.....  
.....

19. What do you think are the reasons for fewer sales in those periods?

- 1=Low peak in tourism [ ] 2=period of sending of pupils to schools [ ]
- 3=low money in those months 4=other [ ]

19. In your opinion has the demand for quality beef increased or decreased in the past two years?

- 1= Increased [ ] 2=decreased [ ] 3=remained constant [ ]

20. What changes have occurred in quality beef over the last two years ?.....

- 1= Better packaging [ ] 2= No change[ ] 3= Better grading
- 4= compliance of hygiene and safety standards [ ] 5= other (specify) [ ]

21. What pricing strategy do you use? 1= Cost based 2=competition based

- 3= Both Cost based and competition based 4= other (specify) [ ]

22. In your opinion, Is demand for beef higher than that of substitutes? 1=yes 2=No

23. Do you advertise your product ..... 1=Yes [ ] 2= No [ ]

23. How do you advertise your product 1=use of radio [ ] 2=use of TV [ ]

- 3=Use of leaflets/brochures [ ] 4=others (specify) [ ]

24. What are other strategies do you use to increase beef sales?

1=good language (customer care) [ ]

2=Compliance to hygiene and safety standards [ ]

3=Selling standard meat cuts [ ] 4=other (specify) [ ]

25. What challenges you face when undertaking your business?

1=shortage of equipments for handling and cutting [ ]

2=in adequate capital and lack of credit facilitation [ ]

3=customers do not prefer to purchase chilled meat [ ]

4=Limited knowledge and skills on business planning and management

5=High operational costs [ ]

6=Market problem (few customers) [ ]

7 =Higher levies imposed to butcheries/meat shops [ ]

8=others (specify) [ ]

26. In your opinion, what needs to be done to improve beef industry?

1=construction of modern butcheries

2=Livestock keepers to be advised on modern farming [ ]

3=Cross breeding between traditional and Exotic breeds [ ]

4=Land for grazing should be used at maximum utilization [ ]

5=National Ranches need to be restored and enabled to produce high quantity [ ]

6=Enforcement of rules and regulation pertaining to cleanliness [ ]

7=Fattening of cattle to improve the cattle quality [ ]

8=Adequate information to livestock farmers on access to drugs and medication [ ]



**SECTION E: COSTS IN BEEF MARKETING**

27. Please indicate all costs incurred in the process of marketing in a week

<b>Item</b>	<b>Cost TShs</b>
The cost of purchasing live cattle	
The cost of purchasing beef in TShs/Kg	
Transport	
Storage facilities	
Electricity	
Packaging materials	
Advertisement (if applicable)	
Market dues	
Slaughter fees	
Labour costs /salary	
Rent	
Other costs (Specify)	

**SECTION F: BUSINESS DEVELOPMENT AND SUPPORT SERVICES**

28. Have you received any business or technical training? 1=Yes [ ] 2= No [ ]

29. If yes, when and what were the contents?

.....

.....

30. Who were the providers of that training?

.....

.....

31. Did you incur any cost in attending that training? 1= yes [ ] 2= No [ ]

**SECTION G: REGULATIONS**

32. Do you know any regulation set by the authority toward beef marketing?

1=Yes [ ] 2= No [ ]

33. If yes in Question 39, what are they?

.....

.....

34. What are the effects of these regulations on beef cattle production and marketing?(List).....  
.....

35. Given the opportunity what important aspect would you need intervention to enhance your quality for beef marketing activities?

1= Credit access facilitation [ ] 2= Business management skills [ ]

3= Market linkage and information [ ] 4=Graded cattle [ ]

5 = others....(specify) [ ]

**THANK YOU FOR YOUR COOPERATION!**

## Appendix 6: Consumer questionnaire

### SECTION A: BACK GROUND INFORMATION

Questionnaire No.....

Date of interview .....

Name of respondent.....

Mobile contact/e-mail.....

Village/Street .....

Ward ..... District .....

1. Where do you normally buy your quality meat?

1= Butchers/meat shops [ ] 2=Supermarkets [ ] 3= Others (specify) [ ]

2. Why do you purchase beef regularly from this particular source?

1=Convenience [ ] 2= Availability of beef when needed

3=Hygiene and cleanliness [ ] 4=nearby home[ ] 5=Others (specify) [ ]

3. Do you know the attributes of quality beef? 1=Yes [ ] 2= No [ ]

4. If yes, what is the single most important beef quality attributes do you prefer?

1= Tenderness (flavor, juiciness, palatability, texture) [ ]

2= Appearance (freshness) [ ]

3= Fat distribution [ ] 4= Safety from bacteria [ ] 5= Others (specify) [ ]

5. What do you look at when buying a meat? (Rank)

1 = Quality [ ] 2 = Cost [ ] 3 = other (specify) [ ]

6. What form of beef do you prefer? 1= Fresh meat [ ] 2= Chilled meat [ ]

3= Processed meat [ ] 4= Others (specify) [ ]

7. What quantity of beef do you consume per week?..... kg

8. How much do you pay per Kg.....

9. What is your opinion on the price you pay per unit? 1= Price is too high

2= Reasonable price [ ] 3= Lower than expected [ ] 4= other (specify) [ ]

10. What is the distance to the butchery or shop meat place where you purchase Beef? ..... Km
11. In addition to beef what other single most important substitute to meat do you Consume? 1= Chicken [ ] 2= Fish [ ] 3= Goat meat [ ]  
4=Pork [ ] 5=Mutton [ ] 6= others (specify) [ ]
12. Which changes have occurred in quality beef in the last 2 years?  
1= No change [ ] 2= Better packaging [ ] 3=Better grades [ ]  
4=Cleanliness 5= others (specify) [ ]
13. What constraint do you face in consuming quality beef? (Rank)  
1= High price [ ] 2 = Long distance [ ] 3= some butcheries are not clean [ ]  
4= beef sold are not quality [ ] 5= others (specify) [ ]

**THANK YOU FOR YOUR COOPERATION!**

**Appendix 7: Processor/Abattoir questionnaire**

**SECTION A: BACKGROUND INFORMATION**

- 1. Respondent's Name.....DATE.....
- 2. Respondent's communication: e-mail/mobile.....
- 3. Ward.....
- 4. Street.....
- 5. Business Name.....
- 6. Period/Duration in Business..... (years)

**SECTION B: INFORMATION ON BEEF MARKETING**

- 7. What is the source of beef that you process.....
- 8. Where/ from whom do you buy beef cattle?
  - 1= Local wholesalers [ ]    2= Wholesalers from other markets/ regions [ ]
  - 3= Producer/trader groups [ ]    4= Transporters [ ]
  - 5= Other industrial processors [ ]
  - 6= Other (Specify) [ ].....  
.....
- 9. At what price do you buy your cattle? Tsh.....cattle / kg / tone/tone.  

(Select the appropriate units).
- 10. What factors are considered in setting the buying price for beef cattle/beef cattle products?
  - 1= Size [ ] 2= Weight [ ]    3= Supply forces [ ]    4= Demand forces [ ]
  - 5= quantity/grades [ ]    6= Other (Specify) [ ]    .....

11. Are there any contractual agreements between you and your suppliers?

1= Yes [ ] 2= No [ ]

12. If Yes, What kind of arrangements?

1= Formal contracts [ ] 2= Informal contracts [ ] 3= other (specify) [ ]

.....  
.....

13. Do you consider the buying price of cattle affordable?

1= Yes [ ] 2= No [ ]

14. If No, why? .....

.....  
.....

15. What do you look for when buying cattle?

1= Quantity/measurement [ ] 2= Size [ ] 3= Cost [ ]

4= others (specify) [ ]

.....  
.....

16. In your opinion, how is the quality of cattle that you buy

1= Poor [ ] 2= Average [ ] 3= Good [ ] 4=Better [ ]

17. Do you undertake any of the following activities?

Drying (1) Yes (2) No

Grading (1) Yes (2) No

Storage (1) Yes (2) No

Preservation (1) Yes (2) No

Sorting (1) Yes (2) No

18. Do you have access to credit? 1= Yes [ ] 2= No [ ]

19. If yes, what are your sources?

1= Savings and credit groups [ ] 2= Microfinance institutions [ ]

3= Commercial banks [ ] 4= Any other (specify) [ ] .....

20. In your own opinion, what needs to be done to improve beef cattle quality, trade and processing?.....

21. What is the designed daily capacity for your abattoir? Expected number of cattle.

22. What is the current turnover? Number of cattle slaughtered a day...

23 .What is the slaughtering fees per cattle?..... TSH

24. Do you have employees specialized in slaughtering and meat processing?

25. Are they enough 1= Yes [ ] 2= No [ ]

26. What is the gap? Number of expatriates needed

27. What is the processing capacity in Kg per day?.....

28. Do you add value to beef cattle/meat after purchase? ( )

1 = Yes [ ] 2 = No [ ]

How do you add this value?

.....  
.....

29. Are there other processing methods you know?

1 = Yes [ ] 2 = No [ ]

If yes, list them

.....  
.....

30. What is preventing you from using the above listed approach(s)?

.....  
.....

31. Approximately what was the total amount of cattle/beef cattle did you buy last year?  
 .....tones .....kgs. (Select the appropriate units)
32. What quantity did you processed last year?  
 .....tones.....kgs. (Select the appropriate units)
33. What causes the difference?.....  
 .....
34. Who are your sources of the beef cattle ? (rank)  
 1 = Farmers [ ]      2 = Other processors [ ]      3 = Wholesalers [ ]  
 4= Retailer [ ]  
 5= Other (specify) [ ] .....
35. At what average price do you buy this beef cattle ? TZS..... /kg/cattle /tone.  
 (Circle the appropriate unit)
36. Who sets price for beef cattle produce?  
 1 = Buyer [ ]      2 = Seller [ ]      3 = Both [ ]      4 = Other (Specify) [ ] .....
37. What factors are considered in setting the buying price for a beef cattle (rank)  
 1 = Size [ ]    2 = Weight [ ]    3= Supply forces    4 = Demand forces [ ]  
 5 = Quantity [ ]    6 = Other (Specify) [ ] .....
38. What other costs did you incur in buying cattle/beef cattle ? (Estimate cost in Tsh per category)  
 1= Transport..... 2= Storage.....  
 3= Preservation..... 4= Other (Specify).....
39. Do you have an association/cooperative as processors which help you to bargain on influence market price when buying/selling your beef cattle produce/beef cattle products?  
 1 = Yes      2 = No



40. Where do you sell your products and in which form?

.....  
 .....

41. What is the selling price? (In TZS)..... /kg/bag/tonne. (Select the appropriate units).

42. What are some storage techniques you are engaged in and how long do they help preserve this beef cattle produce/beef cattle products?

Technique

Duration of storage

.....  
 .....

43. What are other raw materials required? .....

And where do you get them? .....

44. How can you describe your relationship with the supplier and buyer of beef cattle producers /beef cattle products?

Supplier            1 = Very good [ ]    2 = Good [ ]    3 = Average [ ]    4 = Poor [ ]

Buyer                1 = Very good [ ]    2 = Good [ ]    3 = Average [ ]    4 = Poor [ ]

<p>45. Do you have any contractual agreement with suppliers of beef cattle?                  1 = Yes [ ]    2 = No [ ]</p>	<p>46. Do you have any contractual agreement with buyers beef cattle/beef products?                  1 = Yes [ ]    2 = No [ ]</p>
<p>57.If yes, please indicate the kind of agreement?                  1 = formal contracts [ ]    2 = informal contracts [ ]</p>	<p>58.If yes, please indicate the kind of agreement?                  1 = formal contracts [ ]    2 = informal contracts [ ]</p>
<p>49. What does the contract specify?                  Price .....                  Quality.....                  Time .....                  Other (specify)</p>	<p>50.What does the contract specify?                  Price .....                  Quality.....                  Time .....                  Other (specify)</p>

51. Is there any credit institution which supports you?      1 = Yes [ ]      2 = No [ ]

52. If yes, list them and briefly explain how they support you?

.....  
 .....

53. What are their interest rates?.

54. Did you get any training on processing?      1 = Yes [ ]      2 = No [ ]

55. If yes, from whom and on what issues?.....

.....

56. Can further training add something on processing? 1 = Yes [ ]      2 = No [ ]

57. If your answer is yes, on what issues and why?.....

.....

58. Are there any regulation set by the authority toward beef marketing? 1= Yes 2= No

59. If yes in Qn 58, what are they?.....

.....

60. What are the effects of these regulations on beef cattle production and marketing?.....

61. Please list major business constraints faced and proposed solution

	<b>Constraints</b>	<b>Proposed solutions</b>
In buying	..... .....	..... .....
In storage	..... .....	..... .....
In marketing	..... .....	..... .....
Other (specify)	.....	.....

**THANK YOU FOR YOUR COOPERATION!**