

**ASSESSMENT OF EFFICIENCY IN LIVESTOCK MARKETS IN TANZANIA:  
THE CASE OF PRIMARY LIVESTOCK MARKETS IN MOROGORO  
REGION**

**BY**

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## ABSTRACT

This study assesses marketing efficiency of primary livestock markets in Morogoro Region. A market survey of 120 livestock farmers and traders (wholesalers and butchers) from Nanenane, Mkongeni, Melela, Parakuyo and Chakwale markets in Morogoro Region was conducted to evaluate the structure, conduct and performance of the markets. Two types of structured questionnaires one for the farmers and the other for the traders were used to collect data. Informal interview of the key informants, direct observation and secondary data from the key organizations in the sector were also employed to complement the data. The data collected were analysed using structure-conduct- performance model (SCP), gross margin (GM) and regression analysis. SCP revealed that the livestock markets were perfectly competitive and somehow vertically integrated, size of capital required served as the barrier to market entry 91%. First- come/ first served was the buying/selling practice in place, sales were through usual haggling over prices without weighing the animals or standardization, livestock prices were set by farmers 56%. Producers share was high 85.45% for cattle and 61.17% for sheep and goats (small ruminants). The average marketing margins for wholesalers were 13.06% for cattle and 37.63% for small ruminants, while for butchers were 13.89% for cattle and 32.39% for small ruminants. All markets were efficient but cattle markets were more efficient than small ruminants markets. GM analysis found that, cattle farmers got highest economic profit per livestock sold and wholesalers were the last while for small ruminants; wholesalers led in economic profit and farmers were the last. It is therefore recommended that, district councils should use available media to avail

information about prices of livestock to the market participants, attract many buyers to the markets, provide physical infrastructure in the markets areas, enforce a decree on the use of weighing scales in all livestock markets and financial institutions should support the sector through credit financing schemes.

**DECLARATION**

I, HASSAN MGENI RUPINDO, do hereby declare to the Senate of Sokoine University of Agriculture that this dissertation is my original work and has not been submitted for a degree award in any other University.

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Mr. Hassan Mgeni Rupindo  
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Date

The above declaration is confirmed

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Prof. M. E. Mlambiti  
(Supervisor)

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Date

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## **DEDICATION**

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**LIST OF ABBREVIATIONS AND SYMBOLS**

%	Percentage
<	Less than
>	Greater than
i.e	That is
DALDO	District Agriculture and Livestock Development Officer.
GDP	Gross Domestic Product
FAO	Food and Agriculture Organisation
ILRI	International Livestock Research Institute
NERPO	National Emergent Red Meat Producers Organization
NDA	National Department of Agriculture
WANYAMO	Wafanyabiashara wa Nyama Morogoro
TAZARA	Tanzania Zambia Railway Authority
TRC	Tanzania Railway Corporation
TSAP	Tanzania Society of Animal Production

## CHAPTER ONE

### 1.0 INTRODUCTION

#### 1.1 Background information

##### 1.1.1 Importance of livestock and constraints to its development

Tanzania has the largest herd of livestock among the three East African countries, estimated at 33.7 million cattle, sheep and goats (Odhiambo, 2006). In terms of employment and poverty, it is estimated that livestock is an important source of the livelihood for approximately 160 million rural and peri-urban poor, which is 62 % of the total number of rural poor, or 27 % of the total Sub-Saharan population (Alive, 2004). Livestock accounted for 25% of agricultural gross domestic product in Africa in 1998 (Kaitho *et al.* 2001). In Tanzania livestock production makes up around 13% of GDP and 30% of agricultural GDP (Ashimogo and Greenhalgh, 2007), from which, Mugivane and Ogara (2007) advised that for any agricultural development programme to succeed, integration of the livestock sub-sector is essential.

Livestock is a key sector for economic welfare of livestock keepers (Mlote, 2006). It is of a particular importance for those pastoral communities that entirely rely on livestock and its products for their livelihood. It is equally important for agro-pastoral communities, particularly in the years when food crop production or yields fall below subsistence level (*ibid*). Apart from that, livestock marketing provides meat and other livestock products to the community. There fore, Boi and Ashimogo (2006) pointed out that livestock could be seen on one hand as a means of alleviating poverty, and on the other hand as an economic activity to be supported because of the contribution it makes in meeting rapidly growing demand.

There are three types of livestock markets in Tanzania, namely primary, secondary and border markets (Mlote, 2006). The degree of efficiency is often the measure by which marketing systems are evaluated. However, economic efficiency is more desirable because it considers the value of resources, not just their quantity (ILRI, 1995). Economic efficiency is likely to occur in a competitive environment where traders are forced to provide good quality products and services at low prices, or be undercut by others more willing to do so (ibid).

The vast tracts of land in Tanzania's arid and semi-arid areas are made use of by pastoralists (Odhiambo, 2006). According to Morogoro Region Social –Economic Profile (2002) the region's livestock keeping has traditionally concentrated in Kilosa and Morogoro Rural districts. Currently animals from traditional herds are mainly sold alive on the basis of buyer-seller estimates of quality in designated livestock markets (Kohls and Uhl, 1990). In these markets, there are no weighing scales, buyers and sellers have to pay entry fee, levy and trade permit and there is unreliable supply of livestock as the producers sell their animals on emergency cases (Mafuru *et al.*, 2006).

### **1.1.2 Problem statement and justification**

In many instances, livestock can also be one of the main avenues for the rural and peri-urban poor to get out of the poverty trap (Alive, 2004). Nevertheless, in absence of well functioning markets, agricultural production can experience severe drawbacks (Somano, 2008). An efficient market mechanism marked with good performance has an impact upon the income of herders, traders, exporters and other

market participants in particular and the national economy in general (ibid). Its impact is more serious in areas where livestock are the dominant source of livelihood of the community (ibid). Thus, agricultural marketing efficiency has attracted the attention of many countries and it is viewed as an important national development strategy (ibid). In Tanzania, factors that affect livestock primary markets include lack of marketing plans, distance from the primary auction markets, poor management of auction markets, lack of standards and poor animal health (Mafuru *et al.*, 2006).

Similarly, Bekure and Tilahun, (1983) found that the obstacles to economic efficiency in marketing are lack of information, resistance of established institutions and monopoly or oligopoly power on the part of some market agents. The consequence of which in Tanzania is having 87% of all the “poor” living in rural areas where agriculture in the broader sense (i.e. crop and livestock sectors) is the main occupation (URT 2002). Besides, inefficiency in livestock markets has caused prices of animal protein including meat to be unaffordable. The current per capita consumption is 7.3 g/day animal protein, which is far lower than the FAO recommended level of 21 g/day (Mafuru *et al.*, 2006).

In Tanzania, there is plenty of information on livestock production, but information on efficiency in livestock markets, especially in primary livestock markets is not well documented. Similar observation was reported by Bekure and Tilahun (1983) that, in most African countries there is a severe paucity of time series data on livestock prices as well as on the performance and efficiency of livestock marketing

system. This study intends to bridge this information gap; the findings will be useful in research, planning and policy formulation in the livestock sector.

### **1.1.3 Objectives**

#### **1.1.3.1 Main objective**

To assess efficiency in primary livestock markets and identify efficient market mechanisms which provide higher and more reliable returns to resource poor livestock keepers.

#### **1.1.3.2 Specific objectives**

1. To describe the structure of primary livestock markets.
2. To assess the way business is conducted in primary livestock markets.
3. To determine and compare economic profit obtained by livestock keepers and traders in the primary livestock markets.
4. To suggest market strategies that will improve efficiency of primary livestock markets.

#### **1.1.3.3 Research questions**

1. What is the structure of primary livestock markets?
2. How business is conducted in primary livestock markets?
3. Is there any economic profit to livestock keepers and traders in primary livestock markets and who benefits more between the various stakeholders?
4. Are there strategies that can improve efficiency of primary livestock markets?

## CHAPTER TWO

### 2.0 THEORY AND LITERATURE REVIEW

#### 2.1 Livestock markets in Tanzania

"Livestock market" means any location where livestock is assembled and sold at public auction or on a commission basis during regularly scheduled or special sales (FLS, 2008). The term "livestock market" shall not include private farms or ranches or sales made at livestock shows, fairs, exhibitions, or special breed association sales (ibid). A market for a particular commodity exists when producers and consumers exchange the commodity at mutually agreed prices (Massawe, 2007). Market participants may also engage in moving, storing, grading and processing the commodity in expectation of enhancing its value to consumers (ibid). Available market for agricultural produce means opportunity to sell farmer's produce at an attractive price (Vezina, 2005). Livestock production in Tanzania has mainly been for the domestic market with minimal export of live animals, hides and skins within and to neighboring countries (URT, 2006).

In Tanzania livestock are mainly sold through three types of markets; primary markets which are the first centres where livestock producers meet traders, these are concentrated in the main producing areas and are controlled by district councils; secondary markets, where the traders from primary markets meet other livestock traders, these markets are controlled by central government and border markets, where livestock trade between countries can be conducted legally and the government collects revenue (Mlote, 2006).

## **2.2 Opportunities for livestock development in Tanzania**

Tanzania is endowed with large livestock population, estimated at 17.7 million cattle (FAO, 2003); 11.6 million goats, 3.5 million sheep and 47 million chickens (MOA, 2000). According to UDEC (2005) Tanzania has a land resource base estimated at 94 million hectares, out of which 60 million hectares are rangelands suitable for livestock production, thus there exists an opportunity of establishing beef ranches, beef processing and packing products. Similarly, existence of a large herd of indigenous livestock Tanzania Short horn Zebu (TSZ), Tanzanian cattle population creates opportunity which once exploited can significantly contribute to national GDP. The TSZ provide the bulk for meat consumed in the country (URT, 2006). Meat from TSZ is preferred due to its aroma, juiciness, marbling and tenderness (ibid). When TSZ is fattened it is slaughtered at the age of 2.5years (ibid). Andersen *et al.* (2005) reported that urbanization is occurring quickly in Africa, and incomes are higher in urban than in the rural areas, this therefore creates an opportunity for beef marketing. Similarly the growth of export markets, adds more opportunity for livestock keepers and marketers to expand their business (Mapunda, 2007). According to budget speech of 2006/2007 a total of 1706 cattle and 800 goats were exported to Comoro and Burundi in the year 2005/2006.

## **2.3 Marketing challenges faced by the livestock sector**

Marketing constraints in developing areas include inadequate infrastructure, marketable livestock numbers, market information and poor condition of livestock (Montshwe, 2006).

### **2.3.1 Infrastructure**

Mahabile *et al.* (2002) report that lack of marketing facilities imposes serious constraint on the marketing of livestock. According to NDA (2005) most of the beneficiaries (livestock keepers) are located in areas remote from major markets, where there is serious lack of both physical and institutional infrastructure. NERPO (2004) reports that in South Africa, lack of marketing facilities such as sale pens and loading rumps are some of the numerous factors that impose a serious constraint on small-scale farmers' ability to market their cattle.

### **2.3.2 High transactional costs**

According to Musemwa *et al.* (2007) remote location of most communal cattle producers coupled with poor road networks; result in high transactional costs (especially transport costs) reducing the price that traders are prepared to pay for the cattle. Mahabile *et al.* (2002) found that even if farmers are in areas with good road linkages, the distance from the markets tends to influence transaction costs. Additionally, NDA (2005) found that farmers incur extra transport costs to obtain transporting and selling permits from the police stations and veterinary offices, respectively. It is statutory requirement that when purchasing or selling cattle, they must have a valid identification certificates and transporting permits (*ibid*). These restrict farmers' participation in distant markets (Musemwa *et al.* 2008).

### **2.3.3 Lack of information**

Bailey *et al.* (1999) report that none or poor provision of agricultural information is a key factor that has greatly limited agricultural development in developing countries. According to Coetzee *et al.* (2004) farmers' information needs are those

that enable them to make rational, relevant decisions and strengthen their negotiating ability during transactions with buyers and consequently prevent possible exploitation by better informed buyers. Jabbar *et al.* (2008) narrated that the livestock market was characterised by non-standardised products and lack of information in the public domain about supply, demand and prices. Bailey *et al.* (1999) further report that information needs for communal farmers range from information on prevailing production techniques, quantity, price and to market opportunities. Montshwe (2006) indicates that radio and personal communication are still used as main sources of information. However, access by smallholder farmers to radios, televisions and internet is still limited (*ibid.*).

Lack of time and reliable information is severe particularly in the communal areas (Montshwe, 2006). The poor transfer of knowledge, skills and information is further manifested by limited interaction between farmers and extension officers due to poor road networks and resource (Coetzee *et al.*, 2004). Staff (extension agents) morale is low and availability of extension services is limited to the urban and peri-urban abodes of the agents (Manyang *et al.*, 2005).

#### **2.3.4 Other marketing challenges**

Raad and Karami (2006) report that, researchers do not regularly acquire ideas and priorities about their research problems/ topics from extension workers. Their research priorities were to a great extent obtained from journals, magazines and other research experience. Puthira Prathap *et al.* (2008) found that in the last five decades, there has been a sharp decline of about 34.41% in the sheep population in

India. Musemwa (2008) cited Makhura (2001) that lack of marketable livestock numbers and poor condition of livestock result in buyers not coming to purchase livestock since they fear facing high transactional costs. Mapiye *et al.* (2007) suggest that group marketing can result in higher premium prices and profits. According to Van den Bos (2004), lack of marketable livestock numbers is also a result of livestock theft.

Musemwa (2008) further argued that poor condition of livestock results in farmers getting low farm-gate prices especially during dry spell. The poor condition of livestock can be caused by either shortage of feeds or disease infestation. Rahmann and Seip (2007) reported that infestation with endo parasites can have severe consequence for animals as well as for livestock farmers leading to economic loss. Lack of operating capital also impedes livestock marketing. Jabbar *et al.*, (2008) reports that most traders used own capital as formal credit was limited. Alam (2008) reports that transport of livestock is often by trekking, or in open top trucks and trains in the most inhumane ways, lameness and the inability to walk are common signs shown by the animals. Consequently, animals lose weight and meat quality deteriorates (*ibid*).

#### **2.4 Theoretical framework of structure- conduct - performance model (SCP)**

According to Ajala and Adesehinwa (2008) a large number of agricultural marketing studies rely on the theoretical foundations laid by the “perfect competition” model. This is particularly true in studies based on the structure-conduct-performance paradigm. The paradigm originated from the work of Bain (1968).

Kohls and Uhl (1990) reveal that agriculture marketing refers to the performance of all business activities (marketing functions) involved in the flow of goods and services from the point of initial agricultural production to the ultimate consumers. By this definition, the performance of economic system will depend much on the efficiency and effectiveness with which the marketing functions are carried out. According to Mapunda (2007), market efficiency can be judged based on how efficiently the services are provided and how well the prices guide the resources in production of goods and services.

Aleksandrova and Lubys (2004) argue that there is a predictable relationship among the three components of structure -conduct - performance model. Given a structure, a pattern of conduct can be predicted which in turn, leads to a predictable pattern of performance. However, some of the weaknesses of the model include the degree of influence concerning behavioral and performance characteristics, and types of indicators to assess the performance. For example structure of a market may provide the conditions for potential types of firm behavior, but there is no necessary fulfillment of these and therefore structure cannot be held to be absolutely deterministic of conduct and performance (Scarborough and Kydd, 1992). According to Ajala and Adesehinwa (2007) the SCP model has been criticized for being too abstract and deterministic. The theory has been criticized on the following grounds:

- Its price integration and price performance analyses are static and suffer from spatial arbitrariness.

- Its market segmentation concepts with respect to margins and transfer costs are faulty.
- It does not explain how competition among traders may affect consumers' welfare.

Thus, the approach fails to explain the causal links between structure, conduct and performance and vice versa. Despite these limitations, the SCP framework still remains the conventional approach for studying market institutions (Scott, 1995) cited by Ajala and Adesehinwa (2007).

#### **2.4.1 Market structure**

According to Scarborough and Kydd (1992), market structure refers to the organizational characteristics of a market that influence the nature of competition and pricing mechanisms within the market. Ashimogo (2005) defined market structure as the organizational characteristics which determines the relations of sellers in the market to each other, of the buyers in the market to each other, of the sellers to the buyers, and of the sellers established in the market to other actual potential suppliers of goods including potential new participants which might enter the market.

According to Pomeroy and Trinidad (1995) structural characteristics may be used to classify markets. Market may be perfectly competitive, monopolistic or oligopolistic (ibid). According to Ajala and Adesehinwa (2008) among the parameters considered important in determining market structure are the number and relative size of

buyers and sellers; the degree of product differentiation (that is, nature of product-whether products are standardized (homogenous) or differentiated; the ease of entry and exit of buyers and sellers into and out of the market (i.e. entry and exit conditions), factors that may influence entry or exit include absolute cost advantages held by existing participants (firms) or absolute entry costs that are prohibitive, an example of the latter is the substantial capital requirements associated with entry into some business venture, that is size of operating capital, the status of knowledge about costs, prices and conditions among the participants in the market (that is, market information) and degree of integration (whether vertical or horizontal integration).

Scarborough and Kydd (1992) argue that performance is expected to be satisfactory under the following conditions: if sufficient number of buyers and sellers exist to provide alternative outlets without one of them having the market power to dominate others; if market transparency with regard to product quality, various goods and prices is given and if no serious barriers to market entry and exit.

#### **2.4.1.1 Market concentration**

Market concentration is the number and size distribution of sellers and buyers in the market (Pomeroy and Trinidad, 1995). Measures of market concentration are subject to a number of methodological and empirical weaknesses. The simplest measure of concentration is the number of traders within the market area but this gives no idea of their relative size in order to incorporate firm size. The mainstream economics literature has employed measures of market share based on employment, net output

sales (Goodman, 2004). Measures of market concentration include four-firm concentration ratio (CR4), the Herfindahl-Hirschman-index (HHI) and the Concentration index.

According to Carlton and Perloff (2005) the four-firm concentration ratio (CR4) which is the share of industry sales accounted for by the four largest firms is the most common variable used to measure the market structure of an industry. It is bound in the range between 100% and 0%. A pure monopoly would have a CR4 of 100%, whereas a perfectly competitive market would have a CR4 approaching zero. This index, however, lacks the ability to capture the impact of firm size; it is much more complicated to determine the anti-competitiveness in market with four equal firms. Over time, it has become apparent that CR4 index does not stand as a useful measure.

In 1986, the Department of Justice (DOJ) of United States of America adapted new guidelines which use the Herfindahl-Hirschman Index (HHI) to measure market concentration (FPSC, 2001). However, Carlton and Perloff (2005) observed that some empirical studies produce similar results for both the HHI and four firm concentration indices. According to Kohls and Uhl (1990) the concentration ratio of over 50% is an indicator of strong monopolistic industry, 33-50% weak monopolistic industry and less than 33% is an indication of an unconcentrated industry (perfectly competitive). This study adopted the concentration index by Kohls and Uhl (1990).

#### **2.4.1.2 Barrier to market entry**

Carlton and Perloff (2005) defined barrier to market entry as anything that prevents an entrepreneur from instantaneously creating a new firm in a market. According to Staats *et al.* (2006) barrier to market entry and exit is the degree to which an existing firm can raise prices before other firms can profitably enter the market. Goodman (2004) reported that Bain (1968) considered three sources of barrier in the broadest definition of barrier to entry; absolute cost advantage, significant economies of scale relative to market size and product differentiation advantage, where established firms have advantage over entrants because of consumer preferences for their products.

#### **2.4.1.3 Market information**

This refers to information available to buyers and sellers that enables them to take decisions in the market environment in which they operate (Ajala and Adesehinwa, 2008). It is believed that buyers and sellers will make more rational decisions if they have more information at their disposal pertaining to prices in different markets. Parameters for assessing market information include prices in different markets, knowledge of the actors that competitors (other market participants) take and information about future market conditions (*ibid*).

#### **2.4.1.4 Vertical integration**

When a firm owns two or more levels of production or marketing, it is vertically integrated. Hence vertical integration simply means “ownership.” (Ajala and Adesehinwa, 2008).

### **2.4.2 Market conduct**

Market conduct refers to patterns of behaviours that firms follow in adapting or adjusting to the markets in which they sell or buy (Pomeroy and Trinidad, 1995). According to ILRI (1995), conduct refers to the strategies that firms pursue with regard to price, product and promotions, and the linkages/relationships between and among firms. Also ILRI (1995) argues that, the market behaviour of firms will determine whether or not they compete and whether they are acting innovatively to improve market efficiency. Informal association between even a small numbers of firms (collusion) can cause price distortions, and seemingly independent firms can have joint ownership (subsidiaries).

Pomeroy and Trinidad (1995) found that there are two closely interrelated aspects of market conduct; the first is the manner in which devices and mechanisms by which the different sellers coordinate their intrinsically rival decisions and actions. This deals with how sellers adapt to each other, or succeed in making their decisions mutually consisted as they react to demands for their product in the common market. The second aspect concerns with the character of pricing policies and related market policies that sellers in the industry adopt. Market conduct can be assessed in terms of individual or collective aims or goals that different sellers pursue as they determine selling prices, their sales promotion outlays and the design and quantities of their products. Analysis of market conduct entails an examination of the buying and selling behaviour of various market participants, forms of which competition amongst them (pricing, terms of payments and credit), level of activity and actions to avoid competition by for instance collusion (ibid).

### **2.4.3 Market performance**

Pomeroy and Trinidad (1995) define market performance as the impact of structure and conduct measured in terms of variables such as prices, cost and volume of outputs. According to Kohls and Uhl (1990) common indicators of performance are trends in retail prices, level of stability of firm prices and income spread of marketing margins, marginal propensity to consume and farmers 'share of consumers shilling spent on agricultural product, middlemen profitability and parity farm price.

Ajala and Adesehinwa, (2008) used the market margin, levels of profit, marketing costs and market efficiency to assess market performance. Mapunda (2007) reports that, a common method of measuring market efficiency is to examine marketing margin. Fafchamps and Madhin (2006) defined marketing margin as the difference between the value of sales and purchases. Mapunda (2007) further points out that the term marketing margin is commonly used to the difference between farm-gate and consumer prices of equivalent quantity of product. However, it may also describe price difference between other points on the marketing chain for example between wholesaler and retailer prices. Ajala and Adeseheniwa (2008) point out that marketing margin shows the fraction of the consumer expenditure as a commodity that is received by the producer and each of the marketing agents. The marketing margin is used to give close approximation of the market performance (ibid). Piadozo (2007) further reveals that marketing efficiency is evaluated based on the gross marketing margins received by traders.

### **2.5 Livestock marketing studies**

According to Mlambiti (1999), about 25% of the total costs incurred in the process of producing goods and services are contributed by marketing activities. About 25 to 30% of the nation's work force holds marketing positions. Mlambiti, (1999) further argues that, marketing activities determine and influence the success of business units or organizations in the community and hence affect the lives of individual consumers as whole. Agricultural marketing have a great potential in creating employment opportunities, increasing production and distribution of income by involving majority of people, reducing un employment and fostering national security (Matola, 2005). According to Ajala and Adesehinwa (2007) specific ways in which efficient marketing systems play a leading role in economic development have been widely documented. Essentially, it is within marketing systems that prices are generated and allocation of resources, income distribution and capital accumulation are determined (ibid). It is therefore of great importance for research workers in developing countries to provide adequate information on the efficiency and constraints of marketing systems on which effective policies and strategies can be based (ibid).

In many African countries (e.g. Ethiopia and Nigeria) the occurrence of major religious (Christian and Muslim) holidays has a market effect on supply, demand and prices of livestock, especially those of small stock. Demand is high during these holidays and prices can be 80% more than the annual average price (Okali and Obi, 1982) as cited by Bekure and Tilahun (1983). It is therefore essential to intensify livestock market data collection during such holidays in order to accurately assess their impact on various market parameters (ibid). Bekure and Tilahun (1983) further

argue that, livestock marketing studies are essential to provide vital information on the operations and efficiency of the livestock marketing system for effective research, planning and policy formulation in the livestock sector. Yet in many instances policy decisions on livestock marketing are taken in the absence of vital information on how they affect livestock producers, traders, slaughter-houses, butchers and consumers (ibid).

Thus in any country, livestock marketing studies are essential to provide vital information on the operations and efficiency of the livestock marketing system for effective research, planning and policy formulation in the livestock sector (ibid).

## **2.6 Approaches used in previous studies to assess market efficiency**

A common method of measuring market efficiency is to examine marketing margins; this is an attempt to evaluate economic or price efficiency but may be limited in value (ILRI, 1995). Others are descriptive and organizational approaches/methodologies (Smith, 1981). According to Scarborough and Kydd (1992) another method is the internal productive efficiency of marketing enterprise; this is a measure of firm level of economic efficiency which is a combination of technical efficiency and operational efficiency (ibid). Another method is structure-conduct-performance (Bain, 1968).

Other methods are; commodity chain approach which builds on the SCP framework. It assumes vertical as well as horizontal relationships between firms in evaluating market performance and is very dynamic in following the entire commodity flow

from producer to ultimate consumer (Ajala and Adesehinwa, 2007). Among its limitations is that it has been argued that institutions emerge due to high assets especially, high uncertainty, high levels of transactional idiosyncrasy and high levels of opportunism (ibid). Transactions cost approach; the theory predicts that transaction costs increase with distance, market concentration, systemic complexity and declining clarity of property rights and declines with relational contracts with standardizing quality and quantity (ibid).

According to Ajala and Adesehinwa (2007), the study of markets and marketing has witnessed a lot of paradigm shifts. The existence of wide range of models suggests that, there is hardly any single and adequate theoretical framework for studying markets, particularly in developing countries. Any of these approaches can be used singly or combined. The choice of any or combination of the approaches is usually guided by considerations such as nature of the problem, complexity of the marketing systems and the constraints involved (ibid). This study used structure, conduct and performance approach to study efficiency of livestock markets.

## CHAPTER THREE

### 3.0 METHODOLOGY

#### 3.1 Description of the study area

##### 3.1.1 Location

Morogoro lies between lat 5°50" and 10° 0" south of the Equator and between long 35°25" and 38°30" east of Greenwich. Neighboring regions are Tanga and Arusha to the north, Coast Region to the east, Dodoma and Iringa to the western part and Ruvuma region to the south (Morogoro Region Social–Economic Profile, 2002). The region covers an area of 73 039 km<sup>2</sup> of which 2 240 km<sup>2</sup> are water area. As proportion of Tanzania mainland with a total area of 942 784 km<sup>2</sup>, the region comprises of 7.75%. Land area wise, Morogoro makes up 8.0% of Tanzania Mainland area of 885 987 km<sup>2</sup> (ibid).

##### 3.1.2 Climate and topography

According to Morogoro Region Social–Economic Profile (2002) the region's temperature varies between 18°C on top of the mountains and 30°C in the valley. In most parts of the region the average temperature are almost uniform at 25°C. There is always, bimodal rainfall pattern falling between November and May with a dry spell in January and February. Average rainfall varies between 600mms and 1800mms. The topographic nature of the mountains affects the South East Trade Winds, which is the major rain bearing front, forcing these winds to precipitate more on the wind side. Hence the Eastern of Uluguru Mountains receives very high rainfalls amounting up 2 850mms annually. The lee ward side of these mountains is generally dry with some of them receiving less than 600mms per annum. Areas with

least rain are Gairo and Mamboya divisions in the north of Kilosa District and Ngerengere Division in Morogoro Rural District (ibid).

### **3.1.3 Population size and administrative units**

According to 2002 census, the region has a population of 1 783 664 people equal to 5% of the total population of Tanzania which was 34 671 453 people. Population growth rate is estimated to be 2.6 with population density is 25 people per sq km. In the 2002 population census, there were 228 863 people in Morogoro Urban, 263 920 people in Morogoro Rural, 489 513 people in Kilosa, 322 799 people in Kilombero, 194 209 people in Ulanga and 260 525 people in Mvomero (URT, 2003). Administratively the region has six districts; Kilombero, Ulanga, Kilosa, Morogoro Rural, Mvomero and Morogoro Urban. The study was carried out in Kilosa, Mvomero and Morogoro Urban.

### **3.1.4 Socio economic activities**

People with different ethnic groups inhabit in Morogoro region. More than 85% of people in the region depend on agriculture (arable and livestock keeping) as their major economic activity. Livestock keeping in the region has traditionally concentrated in Kilosa and Morogoro Rural districts. By estimate, there were 508 505 cattle, 220 633 goats and 57 785 sheep in 1999. There are about 16 livestock markets, one in Morogoro Urban, four in Morogoro Rural, eight in Kilosa, two in Kilombero and one in Ulanga. Other important economic activities include forestry, fisheries, beekeeping, wildlife, industry, business and mining. (Morogoro Region Social–Economic Profile, 2002).

### **3.1.5 Infrastructure**

#### **3.1.5.1 Road network**

The region has road network totaling 4724 km out of which 573 km is trunk roads, 1079 km is regional roads, 1 649 is district roads and 1 423 is feeder roads. There are two railways serving the region, TAZARA and TRC, where 50% of the former lies within the region and less than 10% of the later lies in the region (Morogoro Region Social–Economic Profile, 2002).

### **3.2 Conceptual framework**

A large number of agricultural marketing studies rely on the theoretical foundations laid by the “perfect competitions” model. This is particularly true in studies based on the structure-conduct-performance paradigm (Ajala and Adesehinwa, 2008). The structure-conduct-performance approach postulates that as market structure deviates from the paradigm of perfect competition, the degree of competitive conduct will decline and there will be a consequent decrease in output (supply) and allocative efficiency, and increase in price (ibid). This implies that the performance of markets can be assessed based on the level of competition and efficiency in those markets (Williams *et al.*, 2006).

Analysis of efficiency in the primary livestock markets was done by looking at the three major components; market structure, conduct and performance. The approach, based on ideal competitive market conditions, holds that if the market is "structured" in a particular way, it will tend to make participants “conduct” their business in

particular and rather predictable ways, with again particular and partially predictable consequences for market “performance” (ILRI, 1995). Figure 1.



**Figure 1: Conceptual framework**

### 3.3 Study design

The study involved a cross sectional single visit survey. This design allowed collection of data at one point in time .i.e. during October to December 2008.

### 3.4 Sampling technique and size

Morogoro region has six districts; Kilombero, Ulanga, Kilosa, Morogoro Rural, Mvomero and Morogoro Municipality. Because of fund and time limitations, the survey was confined to three districts (Kilosa, Mvomero and Morogoro Municipality). Kilosa and Mvomero districts were purposely selected based on the number of livestock they possess and Morogoro Municipality was selected for being the sole municipality in the region. Second stage involved random selection of two primary livestock markets from each Kilosa and Mvomero districts and the one from Morogoro Municipality. Last stage was selection of respondents, where all the primary livestock market actors (livestock keepers and traders) constituted a sampling frame. The list (of prospective livestock keepers and traders) was obtained from the respective primary livestock managements.

Assuming that livestock keepers are homogeneous and livestock traders are also homogeneous, from each primary livestock market eight livestock keepers (five dealing with at least cattle and three dealing with at least sheep and goats), eight wholesalers (five dealing with at least cattle business and three dealing with at least sheep and goats business) and eight butchers (five selling cattle meat and three selling sheep and goats meat) were randomly selected from each primary livestock market's sampling frame. A total of 120 respondents were selected and interviewed. Table 1 shows the distribution of the respondents between districts and livestock primary markets within the selected districts.

**Table 1: Morogoro Region: Sample size and selection**

District	Primary market	Number of farmers	Number of wholesalers	Number of butchers	Number of respondents
Morogoro					
Municipality	Nanenane	8	8	8	24
Mvomero	Mkongeni	8	8	8	24
	Melela	8	8	8	24
Kilosa	Parakuyo	8	8	8	24
	Chakwale	8	8	8	24
Total		40	40	40	120

### 3.5 Data Collection

Both primary and secondary data were collected for use in this study.

### **3.5.1 Primary data collection**

Primary data for this study were collected through formal and informal surveys. Informal surveys such as key informant interview and direct observation were employed to get an in-depth understanding of issues related to efficiency of livestock markets. Formal surveys involved personal interviews using designed, pre-tested and adjusted structured questionnaires. Two types of questionnaires were employed, one for livestock keepers (farmers) (Appendix 1) and the other for the livestock traders (wholesalers and butchers) (Appendix 2).

The overall sample size was 120 respondents (Table 1) categorized into two groups: livestock keepers and traders (wholesalers and butchers). The sample was drawn randomly from five primary livestock markets: Parakuyo and Chakwale in Kilosa, Mkongeni and Melela in Mvomero and Nanenae in Morogoro Municipality. In every market, eight livestock farmers, eight wholesalers and eight butchers were interviewed. From the wholesalers and butchers, five were cattle traders, and at least three were sheep and goat traders.

### **3.5.2 Pre-survey**

Pre-survey was conducted in October 2008 prior to the main survey. This enabled to test the questionnaire, it involved three primary livestock markets: Nanenane and Mkongeni Merela and it used a small sample of 20 livestock keepers and traders.

### **3.5.3 Questionnaire administration**

The questionnaires were administered from late October 2008 to the end of December 2008, with the help of the respective primary livestock market

managements. To ensure high rate of response for the interview, the respondents were interviewed at their respective primary markets, after buying and selling activities.

#### **3.5.4 Secondary data**

Secondary data were collected from the respective primary livestock market managements, the respective District Agriculture and Livestock Development Officer (DALDO) office, internet and Sokoine National Agriculture Library (SNAL).

#### **3.6 Methods of data analysis**

The computer based statistical package for social sciences (SPSS) Version 12.0 was employed for both descriptive and quantitative analysis of the data, based on the objectives stated. Descriptive analysis involved the use of means, percentage and frequencies, whereas quantitative analysis involved the use of gross margin analysis, marketing margin analysis and market concentration index.

##### **3.6.1 Assessment of livestock market structure**

Areas studied under market structure included, market concentration, barrier to market entry, market information and vertical integration.

###### **3.6.1.1 Livestock market concentration**

This is the measure of marketing power. Respondents were asked to mention number of buyers/ sellers and volume of livestock handled by each buyer and seller. According to Kohls and Uhl (1990), the concentration ratio of over 50% is an

indicator of strong monopolistic industry, 33-50% weak monopolistic industry, less than 33% is an indication of unconcentrated industry. Ajala and Adesehinwa (2008) conclude that the higher the level of concentration the higher the inefficiency in the market structure.

The concentration ratio (CR) was found by computing the number of livestock (cattle, sheep and goats) purchased by largest four firms (buyers) per month (400+321+310+258) cattle and (324+250+225+190) sheep and goats divided by total number of livestock handled in the livestock markets of 6915 and 4145 (total number of cattle and small ruminants i.e. sheep and goats, respectively, handled by both wholesalers and retailers).

The following relationship was used:

$$C = (XP/IP) * 100$$

Where

C = Concentration index

XP = Number of livestock purchased by largest four firms (buyers).

IP = Total number of livestock handled in the livestock market.

### **3.6.1.2 Barrier to market entry**

Questions such as what factors they face with regard to livestock production and marketing (capital costs and scale economies) were included in the questionnaires to address barriers to market entry and the answers were recorded and analyzed by using descriptive statistics.

### **3.6.1.3 Market information**

Questions regarding availability, type and source of market information to buyers and sellers were included in the questionnaires, and the answers were recorded and analyzed by using descriptive statistics.

### **3.6.1.4 Vertical integration**

Questions regarding coordination of production and marketing decisions in the industry were included in the questionnaires, and the answers were recorded and analyzed by using descriptive statistics.

### **3.6.2 Assessment of livestock market conduct**

This was done by studying the buying and selling practices as well as pricing behavior in the markets. Questions regarding source of livestock, distribution channels, existence of formal and informal groups which can have impact in bargaining power, buying and selling practice in place, distribution channels used, terms of payments, price setting, factors considered in price setting, basis for price differentiation, existence of constraints in the use of specific market channels and effect of physical location of the market on price and marketing arrangements were included in the questionnaires, and the answers were recorded and analyzed by using descriptive statistics.

### 3.6.2.1 Linear model

According to Gujarat (1995) in establishing linear and non-linear regression models, ordinary least square (OLS) estimation techniques are commonly used. This technique is appropriate for single equation models (ibid). Ordinary least square estimate method makes use of the least square criterion that regression line can be drawn through the scatter of the sample observation such that the positive and negative deviations of observation cancel out (Mukras, 1993). On the other hand the second criterion requires the sum of squares of deviations of the sample observations be minimized (ibid). Gujarat (1995) further claims that of all estimation rules OLS leads to be best linear unbiased estimator and hence its popularity applied in econometrics. The price of livestock was estimated by OLS as shown in following equation:

The regression model;

$$Y = b_0 + b_1X_1 + b_2X_2 + \varepsilon_0$$

Where

Y= Price of livestock in a particular primary livestock market

X<sub>1</sub>= Distance from main (tarmac) road to primary livestock market

X<sub>2</sub> = Number of livestock traders buying from the market

b<sub>0</sub>= Constant term

b<sub>1</sub>= Sample coefficient showing the degree to which distance from main (tarmac) road to primary livestock market influences price of livestock in a particular primary livestock

$b_2$  = Sample coefficient showing the degree to which number of livestock traders buying from the market influences price of livestock in a particular primary livestock

$\epsilon_0$  = Error term representing a proportion of variance in estimating the dependent variables in the equation

### **3.6.3 Assessment of livestock market performance**

The parameters used in assessing market performance in this study are marketing margins, gross margins, and producer's share.

#### **3.6.3.1 Marketing margin analysis**

This was done by comparing the difference between selling prices and buying prices. The differences in prices was established for individual livestock (cattle, sheep and goats) so as to measure the share of final selling price that was obtained by a particular market function in the market. According to Ajala and Adesehinwa (2008) the marketing margin refers to the difference between the prevailing prices at the two ends of the marketing ladder at the time when transactions take place. Piazdo *et al.* (2007) reveal that the more efficient the marketing system is, the smaller the margin. The marketing margin can be expressed either in nominal terms or in percentages (Ajala and Adesehinwa, 2008). The percentage was used in this study.

Marketing margins was calculated for different levels of the market using the following relationship:

$$\text{Marketing margin} = \frac{P_2 - P_1}{P_2} \times 100$$

P2

P1 = Price at one level or stage in the market (Buying price) in Tshs per animal

P2 = Price at another level or stage in the market (Selling price) in Tshs per animal

### 3.6.3.2 Producer's share

The producer's share is the ratio of producer price to consumer price.

This was calculated using the following formula:

$$Ps = Px/Pr = 1-MM/Pr \text{ or } \frac{\text{Producer price} \times 100}{\text{Butcher's selling price}}$$

Where

Ps = Producers' share

Px = Producers' price

Pr = Retail price

MM = Market margin

Wholesalers' share, butcher's share and consumer's share were also calculated using the following relationships:

$$\text{Wholesale's share} = \frac{\text{Wholesaler's selling price} - \text{Wholesaler's buying price}}{\text{Butcher's selling price}} \times 100$$

$$\text{Butcher's share} = \frac{\text{Butcher's selling price} - \text{Butcher's buying price}}{\text{Butcher's selling price}} \times 100$$

$$\text{Consumer's share} = \frac{\text{Consumer price}}{\text{Consumer price}} \times 100$$

$$\text{Butcher's selling price} = \text{Retail price} = \text{Consumer price}$$

### 3.6.3.3 Gross margin analysis

This was done to determine the level of market efficiency and relative profitability obtained by the livestock farmers and traders (wholesalers and butchers) at different levels of the primary livestock market.

According to Mapunda (2007), gross margin is used as a guideline for selection of an enterprise. It is used as a measure of enterprise profitability and such a mean of selecting business plan. Phiri (1991) concluded that, although gross margin is not an absolute measure of profitability it remains the most satisfactory measure of resource use efficiency available in small scale agriculture. Its main advantage is that, it does not involve tedious calculations. Gross margin analysis is also more flexible in accommodating personal expectations and limitation of a particular situation.

Following discussions with the key informants and veterinary field officers in the study area, the following assumptions were made regarding calculations of gross margins for livestock farmers.

1. As family labour spent in herding livestock could have been spent on other activities {opportunity cost}, it was therefore counted as cost to the farmer. Hence, the number of family members participated in herding the livestock was counted and treated as cost existed for the daily wage in the area, which was about Tshs 2 500 per person.
2. A herds-man aged from 17years can efficiently take care of 50 cattle or 75 sheep or goats in grazing/browsing per day.
3. Each animal was either treated or vaccinated at least once a year.

4. The dose used to treat or vaccinate cattle was three times that was used for a sheep or a goat.
5. Cattle were sold at an average age of three years while sheep and goats were sold at an average age of two years.

The gross margin analysis was determined by using the following relationship:

### **Gross margin analysis**

$$GM = TR - AVC$$

Where

GM = Gross margin (Tsh/animal)

TR = Total revenue (Tsh/ animal)

AVC = Average variable cost (Tsh/animal)

## **CHAPTER FOUR**

### **4.0 RESULTS AND DISCUSSION**

#### **4.1 Overview**

This chapter presents results and discussion of the findings of the study based on the specific objectives. It includes respondent characteristics, livestock market structure, livestock market conduct, livestock market performance and strategies of improving efficiency in livestock markets.

#### **4.2 Respondents' socio-economic characteristics**

Household characteristics give the knowledge of the general behaviour and attitude of the people in the study area. It is important for that matter to describe the socio-economic and demographic characteristics of the sampled population.

##### **4.2.1 Age of the respondents**

The mean age of livestock keepers (farmers) surveyed was 47.83 years, while that of wholesalers and butchers was 39.55 and 37.20 years, respectively. The dominant age group for livestock keepers was between 41 and 60 years which made about 57.5% of the interviewed livestock keepers. While the dominant group for wholesalers and butchers were between 20 and 40 years which comprised about 52.5% and 62.5% of the interviewed livestock traders (Table 2). The results indicate that livestock farming is dominated by people with advanced age. This result conforms with the findings of Montshwe (2006) who reported the average age of small-scale cattle farmers in South Africa to be sixty (60) years. Also the results indicate that youth are more involved in livestock trade than those with advanced age. Similarly, among the

traders wholesalers are relatively older than butchers, may be the wholesalers start the business as butchers, once they have accumulated enough capital they change to wholesalers, comparable findings were reported by Ajala and Adesehinwa (2008).

#### **4.2.2 Gender of respondents**

About 100% of respondents for both two groups (livestock keepers and livestock traders) were men (Table 2). This could be due to the fact that livestock marketing involves physical activities such as trekking, chasing and restraining the animal, hence males are more capable due to their masculine nature, another reason might be due to the customs of the traditional livestock keeping societies as in the societies almost all livestock belong to males while females only own some animals through inheritance. Similar result was reported by Mapunda (2007).

#### **4.2.3 Marital status of respondents**

About 100% of livestock keepers were married (Table 2). This shows that the society is stable, no divorce reported in this study, this is difficult to discover due to the fact that most of traditional livestock keepers practice polygamy. About 95% of livestock traders were married, 5% single and no divorce. Marriage under this circumstance was considered as any union between man and woman regardless it is formal or informal. According to livestock keepers married status usually induces someone to work hard in order to fulfill family responsibilities.

### **Table 2: Morogoro Region: Respondents' socio-economic characteristics**

Category	Livestock keeper n=40	Wholesaler n=40	Butcher n=40
Age in years			
Mean	47.83	39.55	37.20
Minimum	25	27	24
Maximum	70	54	50
Dominant	41-60	20-40	20-40
age group			
Gender (%)			
Male	100	100	100
Female	0	0	0
Education (%)			
None	83	85	20
Primary	17	8	65
Secondary	0	0	13
College and above	0	0	2
Marital status (%)			
Single	0	95	95
Married	100	0	0
Divorced	0	0	0
Widowed	0	0	0
Household size			
Mean	14.25		
Minimum	3		
Maximum	32		
Dominant	>11		

#### 4.2.4 Educational level of respondents

Education is one of the strategies that can be used to improve livestock efficiency in Tanzania. In Morogoro region most of traditional livestock keepers did not attend formal education, only 17 % attended primary education, while the rest 83% did not attend any formal education; this is due to migration nature of pastoralists which deprived their children of the opportunity to attend schools. According to Mcfalls Jr (2003) a population comprised of old and low levels of education, tends to resist change and lack initiatives.

Majority of livestock wholesalers interviewed in Morogoro had primary education (85%), secondary education 8% and 7% did not attend any formal education, while 65% of butchers had primary education, 13% had secondary education, 2% diploma and above and the remaining 20% did not attend any formal education (Table 2). Lack of education may explain why most of the traditional livestock keepers lack entrepreneurial skills, enough bargaining power when they sell their livestock; initiative in improving the quality of their livestock and finding good markets for their livestock.

#### **4.2.5 Household size**

The average household size of the respondents in all primary livestock markets was 14.25 for livestock keepers with a minimum of 3 persons and maximum of 32 persons. Household size comprised of parents, children and dependants. Knowing livestock keepers' household size was important due to the vital role played by children especially sons as herd's men. Traditional livestock keeping societies practice polygamy and hence tend to have big families. Normally as herd grows, the owner (man) marries another woman in order to get more children to take care of the growing herd. In addition to that, most of the livestock keepers interviewed were at the age between 41 and 60 hence it is likely to have bigger household sizes.

### **4.3 Livestock market structure**

#### **4.3.1 Livestock market concentration**

The results (Table 3) revealed a concentration ratio of 18.63% for cattle and 23.76% for small ruminants (sheep and goats), which indicate that the market for the

livestock is unconcentrated or perfectly competitive. This might be due to the fact that, most of the livestock traders did not rely on one market for their purchase of livestock, normally they were itinerants, as the markets were conducted in weekly basis the traders moved from one primary market to another purchasing livestock, while other traders purchased at the farm gate. Thus the number of livestock bought by each livestock trader at each particular market was small. Since the traders were sure of complementing the number of livestock they needed through other sources, usually once attend a market they select livestock with high quality only, which are normally few. Another reason might be lack of enough capital as most of livestock traders own small capitals and hence can only buy a small amount of livestock. The concentration ratios in this study contradict with the findings of Juma *et al.* (2006) who reported an imperfect sheep and goats markets.

**Table 3: Morogoro Region: Summary of livestock market concentrations and their components per month**

Item	Cattle	Sheep and goats
<b>Four largest buyers</b>		
First largest buyer	400	320
Second largest buyer	320	250
Third largest buyer	310	225
Fourth largest buyer	258	190
<b>Total</b>	1288	985
<b>Amount handled</b>	6915	4 145
<b>Market concentration</b>	18.63%	23.76%

#### **4.3.2 Barrier to market entry**

The findings showed that, capital requirements served as the main barrier to market entry. About 59% of the traders interviewed indicated that there were barriers to market entry, and among the barriers mentioned capital attributed to 91%, 13% knowledge of business and 8% difficulties in securing business licence (Table 4). The study used operating capital as a measure of the initial capital needed for potential entrants. Analysis showed that the mean value of operating capital for the cattle wholesalers interviewed was Tsh 162 300 000/ trader/month for the biggest and Tsh8 216 250/ trader/month for the smallest, while for the sheep and goats wholesalers was Tsh 15 640 000 /trader / month for the biggest and Tsh1 163 750/ trader/month for the smallest. The mean value of operating capital for the cattle butchers interviewed was Tsh 70 987 500/ trader/month for the biggest and Tsh10 472 000/ trader/month for the smallest, while the mean value of operating capital for the sheep and goats butchers interviewed was Tsh2 670 000 / trader/month for the biggest and Tsh551 550/ trader/month for the smallest.

The implication of this finding is that cattle wholesalers with less than the operating capital of Tsh 8 216 250/month, or sheep and goat wholesalers with less than the operating capital of Tsh1 163 750/ month may be out of the business unless they have access to credit facilities. Similarly, cattle butchers with less than the operating capital of Tsh10 472 000/month, or sheep and goat wholesalers with less than the operating capital of Tsh551 550/ month may be out of the business unless they have access to credit facilities. The results show that the size of operational capital is high and unaffordable and hence could act as a barrier to potential traders. Therefore,

provision of credit facilities to small traders will improve the easy of entry to the livestock business.

Comparable findings have been reported by Juma *et al.* (2006) who observed that capital requirements serve as an entry barrier since only those who have enough capital to cover market costs can enter the market. Similarly, Shi *et al.* (2005) found that improving access to credit may help poor farmers to increase their income sufficiently. Kristiansen (2007) advised that to lower entry barriers in marketing institutional changes are also required. Further more Ajala and Adsehinwa (2008) reported that changing status (from butcher to wholesaler) in marketing systems of pig in Nigeria was largely influenced by size of operating capital.

**Table 4: Morogoro Region: Barriers to livestock market entry**

Type of the barrier	Frequency	Percent
Capital	37	91
Knowledge of business	6	13
Securing licence	4	8

#### **4.3.3 Market information**

In this study, it was established that there were mainly two usual sources of market information concerning prices, demand and supply for the livestock farmers, namely direct visit to the primary markets and cross check with fellow livestock keepers. About 93% of the livestock farmers interviewed indicated that direct visit to the primary markets was their main source of market information while 7% attributed cross checking with fellow livestock keepers as their main source of information. About 98% of the information sought was on prevailing livestock prices; about 45%

was on dates for livestock markets while 15% was about amount of livestock brought to the market (Table 5).

The result implies that, the main source of information concerning price of livestock available to the farmers was the livestock traders. This finding further reveals that, there was no any formal system of providing market participants with price information. Relying on traders for market information is dangerous to farmers, as the traders could distort the information in their favour. The only advantage the farmers of this region had was that some of the traders were also farmers from the same society. In addition to that most farmers had cell phones; hence they could easily communicate with their relatives who were dealing with the business in secondary markets such as Pugu Terminal. Similar findings were reported by Piadizo *et al.* (2007) in the study of problems of the marketing system for vegetables grown in the highlands of Philippines that, farmers lacked reliable source of price information except from buyers. Similarly it has been found by Mlambiti (1999) that inadequate information, particularly about prices could be a major obstacle to the performance of any production and marketing system. Their findings were also similar to those given by Mushi *et al.* (2004) who observed that in Gairo Auction Market, there was no evidence of any formal system for providing market participants with market information.

**Table 5: Morogoro Region: Market information**

Item	Frequency	Percent
<b>Ways of getting information</b>		
Director visit to market	37	93
Cross check with traders	3	7
<b>Total</b>	<b>40</b>	<b>100</b>
<b>Type of information farmers look for</b>		
Prevailing prices	39	98
Dates for markets	18	45
Demand and supply	6	15

#### 4.3.4 Vertical integration

Table 6 shows the state of integration of livestock trade and livestock farming in Morogoro primary livestock markets participants. About 46% out of 80 traders sampled were both livestock producers and traders, while 54% were only traders who assembled to buy livestock in the weekly markets. This implies that, some of the producers are also traders operating in the same market. The market could therefore be said to be somehow vertically integrated since some of the respondents coordinated production and marketing decisions in the industry. The vertical integration could result in higher marketing margin because the traders through integration could gain market power and control over the price paid by consumers. Similar findings have been reported by Ajala and Adesehenwa (2008) who observed vertical integration in pig marketing in Zango Kataf Local Government Area of Kaduna State, Nigeria.

**Table 6: Morogoro Region: Integration of livestock trade and livestock farming in primary livestock markets participants**

Item	Frequency	Percent
Integrated	37	46
Not integrated	43	54
<b>Total</b>	<b>80</b>	<b>100</b>

#### 4.4 Livestock market conduct

##### 4.4.1 Buying and selling practices

###### 4.4.1.1 Source of livestock

Results showed that, there were two main sources of cattle to the markets, 80% out of 80 traders interviewed bought cattle from livestock keepers (farmers) while 60% bought cattle from other traders. About 41% of goat traders bought the livestock from livestock keepers, while 37% bought from other traders. Similarly, 27% of sheep traders bought the livestock from livestock keepers, while 25% bought sheep from livestock traders (Table 7).

This implies that the marketing chain for livestock in the study area is a long one in that, livestock can pass through many market participants or succession of markets before reaching the final consumer, for example livestock could pass through up to three traders in the same market before reaching the butcher, this activity was very difficult to discover as normally local languages was used in such a business and the traders involved normally introduced themselves as livestock farmers and not traders, these traders are commonly known as *garagaja*, therefore the longer the chain the higher the price the consumer will have to pay. Similar findings were

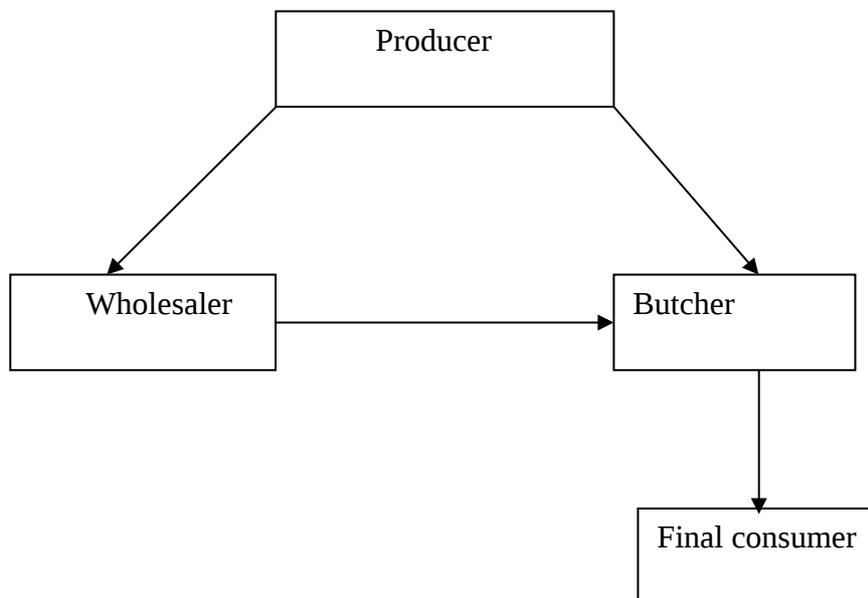
reported by Ajala and Adesehenwa (2007) who observed collectors purchased 80% of the pigs that reached the market with the sole aim of reselling them in the same market for profit.

**Table 7: Morogoro Region: Source of livestock in primary livestock markets**

Source of livestock	Frequency	Percent
Farmers	80	68
Traders	60	62

#### 4.4.1.2 Distribution channels used

The study findings revealed that there were two main market channels through which indigenous livestock move from the producer to the butcher. These are from livestock keeper to butcher and livestock keeper to wholesaler to butcher (Figure 2).



**Figure 2: Morogoro Region: Livestock marketing channels**

About 23% out of 40 farmers interviewed sold their livestock to butchers, 7% sold to wholesalers, while 70% sold to both of them. About 50% out of 40 farmers

interviewed said butchers paid them better price, while 40% said wholesalers and 10% said that their fellow farmers paid better prices (Table 8).

**Table 8: Morogoro Region: Distribution channels and buyers who offer better prices**

Item	Frequency	Percent
<b>Distribution channel</b>		
Farmer to butcher	9	23
Farmer to wholesaler to butcher	3	7
Both channels	28	70
<b>Total</b>	40	100
<b>Buyers offer better prices</b>		
Butcher	20	50
Wholesaler	16	40
Fellow farmers	4	10
<b>Total</b>	40	100

The study further revealed that about 100% of farmers trek their livestock to the primary markets while wholesalers used lorries/trucks as well as trekking the livestock to the secondary markets. Although farmers are expected to take animals to the market for sale, there was no known regulation to sell or buy from a particular market, hence some farmers sold their animals at the farm gate or when they are on the way to the primary market. Traders normally preferred to buy in this way as they could escape market fees and they bought at relatively lower prices as the farmers are less informed about the price before reaching the markets

#### **4.4.1.3 Groups affecting bargaining power**

The study revealed that there were very negligible formal or informal marketing or producer groups that affect bargaining power. About 96% of the traders interviewed said no formal or informal marketing or producer groups that affect bargaining

power, while only 4% mentioned WANYAMO as the formal marketing group that affect bargaining power (Table 9). Despite this finding, some livestock traders complained about the use of vernacular during the bargaining by traders that came from the farmers tribes, because those who do not speak the language could not understand the negotiations and hence deprived them of the power of bargaining, therefore they thought that they bought the livestock at higher prices than the ones from the farmers' tribes.

**Table 9: Morogoro region: Existence of formal or informal marketing or producer groups that affect bargaining power in primary livestock markets**

Existence of groups	Frequency	Percent
Presence of the groups	3	4
Absence of the groups	77	96
<b>Total</b>	<b>80</b>	<b>100</b>

#### 4.4.1.4 Buying/selling practice in place

Results show that, the only buying/selling practice in place is first-come/first-served. Sales on the markets are through the usual haggling over prices without weighing the animals or any other form of standardization. About 50% of the traders interviewed preferred the practice because it allowed bargaining, 6% preferred it because it was confidential, 6% preferred it because it was time saving, 18% said it allowed inspection of the animal, 20% said they used it because it is the only buying/selling practice at their markets, while 1.8% gave no reason (Table 10). This implies that farmers need a selling practice which will enable them to get good

prices for their animals at the same time ensure their security, while buyers need a buying practice which will enable them get good animals at a cheap price.

Many farmers would prefer using weighing scales but they are sceptical about short weights as some traders could conspire with the market officials. Similarly, (auction) open bidding would be an alternative buying/selling practice, but this practice has been said to have two weaknesses, first, in some places some unfaithful traders conspire with the market officials to enable them to get animals at cheap prices, secondly the practice exposes farmers to danger of robbery, as it is done openly robbers can know the amount of money the farmers collected and hence can wait for them in bushes when they are on their ways back home and rob them.

**Table 10: Morogoro region: Buying/selling practice in place and reasons why buyers prefer the practice**

Item	Frequency	Percent
<b>Practice in place</b>		
first-come/first-served	80	100
<b>Reasons for the practice</b>		
Allow bargaining	40	50
Available practice	16	20
Allow inspection of the animal	14	18
Time saving	5	6
Confidential	5	6
<b>Total</b>	80	100

#### **4.4.1.5 Mode of payment**

Two different sales agreements existed between farmers and traders depending upon existed relationship between the parties. About 70% of respondents sold their livestock on the basis of cash payments, while 30% sold basing on both cash and credit (Table 11). Most of the farmers sold on credit had regular buyers. Terms of

payments for credit sales were without interest and the time of payment was one week as the markets normally operated on weekly basis.

This finding implies that most of the farmers preferred cash payments. Comparable findings were reported by Piadizo *et al.* (2007). Main reasons as to why most farmers preferred cash payment were stated to be untrustworthy of some traders, moreover, all farmers had no selling plan, instead they sold their animals in order to solve immediate financial obligations they faced and hence could not sell on credit as they had to go back home with the money to pay for their needs. Some farmers sold their older animals so that they could gate money to buy young animals, these farmers could sell on credit and tolerate for the week to get their money, provided the buyers were their regular customers.

**Table 11: Morogoro Region: Mode of payment, terms of payment and time of payment for the credit sales in primary livestock markets**

Item	Frequency	Percent
<b>Mode of payment</b>		
Cash	28	70
Credit only	0	0
Both cash and credit	12	30

<b>Total</b>	40	100
<b>Terms of payments</b>		
With interest	0	0
Without interest	12	100
<b>Time of credit payment</b>		
One week	12	100

#### 4.4.2 Pricing behaviour

##### 4.4.2.1 Price setting

Table 12 shows price setting and factors used in price setting in primary livestock markets. About 56% of traders interviewed said, price was set by farmers; about 41% said by a group of buyers while 3% said one buyer. About 96% said the main factor used in price setting was the basic demand and supply, while 4% said was long stand relationship. This finding implies that the main price setters were farmers, given the vertical integration in the primary livestock markets, some farmers sell their livestock directly in secondary markets and many farmers having cell phones, the spread of information on prevailing prices in secondary livestock markets to farmers was very wide. That being the case, it goes without saying that the price set by farmers is based on the actual situation in the secondary markets. Although the main factor used in price setting was basic demand and supply, farmers could not have enough bargaining power because they were sometimes naturally forced to sell at any price due to the pressing needs they had, this was mainly contributed by having no selling plan.

**Table 12: Morogoro Region: Price setting and factors used in price setting in primary livestock markets**

Item	Frequency	Percent
<b>Price setters</b>		
Farmers	45	56
Many buyers	33	41
One buyer	2	3
<b>Total</b>	<b>80</b>	<b>100</b>
<b>Factors for price setting</b>		
Basic demand and supply	77	96
Long stand relationship	3	4
<b>Total</b>	<b>80</b>	<b>100</b>

#### 4.4.2.2 Price differentiation

All farmers interviewed said, they did not grade their livestock prior to selling. Price of livestock depended on different groups of factors as product differentiation was in the form of visual assessment of animal size, health and body condition score. All respondents said there was price differentiation. About 72% of traders interviewed said price of livestock depended on body condition of the animal, 70% said depended on size of the animal, while 32% said relied on sex of the animal (Table 13). Another group of factors that affected livestock prices were seasonality and festivals. Livestock were expensive in dry season when Masai herdsmen have moved to wet areas in search of pasture and water, Mworio and Kinyamario (2008) reported that, pastoralists moved 84% of the cattle out their legally designated areas to other areas in search of forage. Similarly, after harvest agro-pastoralists did not sell their livestock as they had enough food. These created scarcity of livestock and hence led to higher prices. Price of livestock also got high during religious festivals such as *Eid*, Christmas and Easter. The prices of livestock fall when Masai herdsmen return to their villages at the beginning of the rainy season, similarly during farming season as farmers needed to buy farm inputs and during food shortage when farmers sold many livestock so as to buy food.

These findings conform to results reported by Mushi *et al.* (2004). This implies that if farmers could use modern livestock husbandry practices such as establishing their own pasture, and supplementing the animals with concentrates they could get better price for their animals throughout the year.

**Table 13: Morogoro Region: Base for price differentiation in primary livestock markets**

Base	Frequency	Percent
Body appearance	58	72
Size of the animal	56	70
Sex of animal	25	32

#### 4.4.2.3 Constraints in the use of specific market channels

About 72% of traders interviewed said there was no constraint in the use of specific market channels, while 28% said there were constraints. The constraints were 86% some traders buying at the farm gate, while 5% lack of capital, 5% movement permits and 4% farmers selling their livestock at secondary markets (Table 14). This implies that once farmers sold their livestock at the farm gate, it meant that the number of farmers brought their livestock to the market was reduced and hence traders at the markets were automatically forced to buy from their fellow traders instead of buying from farmers as they expected, consequently prices of livestock went high as the sellers had to sell on profit.

**Table 14: Morogoro Region: Constraints in the use of specific market channels**

Item	Frequency	Percent
<b>Existence of constraints</b>		
Present	22	28

Absent	58	72
<b>Total</b>	80	100
<b>Type of constraints</b>		
Buying at farm gate	19	86
Lack of capital	1	5
Movement permits	1	5
Farmers selling at secondary markets	1	4
<b>Total</b>	22	100

#### 4.4.2.4 Physical location of the market

About 90% of the respondents said physical location of the market affected prices and marketing arrangements, while only 10% said it did not (Table 15).

**Table 15: Morogoro Region: Effect of physical location on marketing arrangements in primary livestock markets**

Existence of effects	Frequency	Percent
Presence	72	90
Absence	8	10
<b>Total</b>	80	100

Results further indicated that the average producer prices for cattle in the five primary livestock markets surveyed were about Tsh 356 714 for Mkongeni, Tsh 324 150 for Nanenane, Tsh 320 000 for Melela, Tsh 310 000 for Chakwale and Tsh 292 700 for Parakuyo. Similarly, the average producer prices for sheep and goats in the primary markets were Tsh 41 675 for Mkongeni, Tsh 43 250 for Nanenane, Tsh 34 000 for Melela, Tsh 35 175 for Chakwale and Tsh 31 918 for Parakuyo (Appendix 3). The study reveals that, with exception of sheep and goats at Chakwale; Mkongeni, Nanenane and Melela primary livestock markets recorded higher livestock prices, these markets are closer to main (tarmac) roads (accessible through out the year),

while Parakuyo and Chakwale are far away from the main (tarmac) roads recorded relatively lower prices. The results imply that accessibility of the market through good roads affects livestock marketing arrangements and prices, because as the distance from the main (tarmac) roads increases the quality of feeder roads normally decrease. This increases the possibility of getting transport break down especially during wet seasons, and hence livestock traders take longer time to reach the primary markets than it is supposed to be, so do livestock to the second level markets. This situation affected marketing arrangements. Consequently, small number of traders attended the markets and therefore low demand and prices.

#### **4.4.2.5 Results of linear regression analysis**

A multiple linear regression was put in use to determine how prices of livestock are influenced by various factors. In this study, factors such as distance from main (tarmac) road to the primary market, cost of transport to the second level market, number of livestock traders buying from the markets and market charges were analyzed to see if they have significant influence. Stepwise regression method was used to correct for Multicollinearity by gradual addition of variables. After several running of the model, cost of transport to the second level market and market charges were dropped because they were insignificant in the relationship and their inclusion was rendering the model insignificant at  $P < 0.05$  and  $P < 0.1$ . Moreover, Adjusted R square for cattle is 0.936; meaning that about 94% of the total variation in the dependent variable is explained by the independent variables included in the regression model, while about 6% is due to variables that are not included in the model. Similarly, Adjusted R square for sheep and goats is 0.697; meaning that

about 70% of the total variation in the dependent variable is explained by the independent variables included in the regression model, while about 30% is due to variables that are not included in the model. The higher Adjusted R<sup>2</sup> values suggests that the model fitted well to the data i.e. have higher explanation power of the joint association of the factors influencing price of livestock in a particular primary livestock market. Final results of the regression are summarized in Table 16.

**Table 16: Morogoro Region: Linear regression analysis**

Independent variable	beta coefficient(cattle)	t-static (cattle)	t-significance(cattle)	beta coefficient(shoat)	t-static (shoat)	t-significance(shoat)	
Constant	295168.487	34.592	0.001	18456.320	1.937	0.192	
Distance in Km from main road to primary livestock market	-724.174	-2.383	0.140	71.915	363	0.752	
Number of livestock traders in the primary livestock market	629.089	4.738	0.042*	883.386	2.227	0.156	
Dependent variable: Price of livestock				R square (shoat)	0.849		
R square (cattle)				0.968		Adjusted R square (shoat)	0.697
Adjusted R square (cattle)				0.936		F statistics (shoat)	5.601
F statistics (cattle)				30.361			
* Significant at P<0.05							
Shoat= sheep and goats							

The results showed that coefficient for number of cattle traders in the primary livestock markets was statistically significant at P<0.05 and was positively related to the respective price. This implies that as number of traders in the primary livestock markets increases, the price of cattle increases too. The positive relationship between price of cattle in a particular primary livestock market and number of cattle traders buying from the market can be attributed to the fact that, increase in number of cattle traders may increase competition and hence price of the cattle. Distance from

main (tarmac) road to the primary market had negative relationship with the price of cattle in a respective primary livestock market. The negative relationship can be attributed to the fact that as distance from main (tarmac) road to the primary livestock market increases cost of transporting livestock to secondary markets increases too and hence buyers tend to buy cattle at lower prices.

The coefficients for distance from main (tarmac) road to the primary market and number of sheep and goat traders buying from a particular market were statistically insignificant at  $P < 0.05$ . The fact that these parameters were insignificant may be associated with the small sample size used in the model because the samples used were averages from five primary livestock markets (Appendix 3). The small sample size is due to the nature of the study. Having enough number of primary livestock markets for avoiding the problem would need to cover all primary livestock markets in Morogoro region as well as including primary livestock markets from some other regions. That was not possible due to time and financial constraints.

#### **4.4.2.6 Trend of average livestock prices in different primary livestock markets**

Table 17 summarizes information in Appendix 3. The table shows trend of average prices of livestock in different primary livestock markets. Generally, markets which are closer to main (tarmac) roads had higher average cattle prices than those far away from main (tarmac) roads. The higher prices can be attributed to relatively lower average costs of transporting livestock to second level markets. Similarly, with exception of Nanenane, markets attended by many cattle traders had higher average cattle price than those attended by fewer cattle traders, this may imply that an

increase in number of cattle traders bring about competition for the cattle among the traders and hence lead to higher price of the cattle. Average price of cattle at Nanenae market is higher than at Mkongeni may be attributed to Nanenae being in Municipality where demand for meat is higher.

Average prices of sheep and goats are higher in markets which are closer to main (tarmac) roads than those far away from main (tarmac) roads. The trend can be attributed to relatively lower average costs of transporting livestock to second level markets. With exception of Nanenae, markets attended by many sheep and goat traders had higher average sheep and goat prices than those attended by relatively fewer sheep and goat traders, this may imply that an increase in number of sheep and goat traders bring about competition for the livestock among the traders and hence lead to higher price of the livestock. Higher prices of sheep and goats at Nanenane market than at Mkongeni and Melela markets which are much closer to main (tarmac) roads may be attributed to the market being in the Municipality where demand for sheep and goat meat is higher. Differences in market charges between the primary livestock markets do not seem to affect average prices of livestock in the markets. This may be attributed to the small difference in the market charges between the markets.

**Table 17: Morogoro region: Trend of average prices of livestock in different primary livestock markets**

Item (Average)	Nanenane	Mkongeni	Melela	Chakwale	Parakuyo

Distance from main road (Km)	0.5	0.1	0.1	10	27..5
Price of cattle(Tsh)	324 150	365 714	320 000	310 000	292 700
Number of cattle traders	38	96	45	43	25
Price of sheep and goats (Tsh)	43 250	41 675	34 000	35 175	31 918
Number of sheep and goats traders	25	27	18	21	12

#### 4.5 Livestock market performance

##### 4.5.1 Marketing margin

Table 17 shows that marketing margins for the two kinds of livestock (cattle and sheep and goats) were small in all markets and for both wholesalers and butchers. The average marketing margin for cattle wholesalers was 13.06% and 37.63% for sheep and goats wholesalers. While the average marketing margin for butchers were 13.89% for cattle and 32.39% for sheep and goats. The butchers' marketing margins were relatively higher than that of the wholesalers for cattle and relatively smaller for sheep and goats. All markets had low marketing margins for all types of livestock. Comparing the marketing margins for the two groups of livestock; marketing margin for cattle was the lowest in all markets, which means that the cattle markets were the most efficient since the general rule is that the more efficient the market is, the smaller the market margin. Generally speaking, the findings indicate that all markets were efficient.

Since marketing margin represents the price paid for a collection of marketing services, the results reveal that less than 44% of consumers' expenditure in the markets went to the traders as the price for collection of the marketing services. The price for collection of marketing services was relatively higher for sheep and goats than for cattle.

On the other hand, butchers' marketing margins were higher than that of the respective wholesalers in all five markets for cattle and smaller for sheep and goats; this means that livestock markets were integrated over space and this is probably due to the presence of adequate market information through the use of cell phones and interaction of the market participants. Three out of the five markets i.e. Nanenane, Mkongeni and Melela were all close to Morogoro Municipality. Furthermore, almost the same participants visited all the markets in the region.

The relatively higher marketing margins for sheep and goats compared to cattle in the same markets explain the difference in importance given to the different kinds of livestock. Traditional livestock farmers in Morogoro value cattle as the main source of wealth, while sheep and goats are normally kept for food. Hence, when it comes to sales, sheep and goats were less important compared to cattle and hence fewer efforts are made in their marketing. Similar findings were reported by Puthira Prathap (2008).

**Table 18: Morogoro region: Proportion of marketing margin received by livestock wholesalers and butchers in primary livestock markets**

	Cattle	Sheep and goats
<b>Wholesaler</b>		
Nanenane	14.24	36.62
Mkongeni	12.78	34.25
Melela	13.60	39.70
Parakuyo	12.39	43.54
Chakwale	12.31	34.02
<b>Average</b>	13.06	37.63
<b>Butcher</b>		
Nanenane	13.28	34.57
Mkongeni	14.83	33.45
Melela	15.18	29.55
Parakuyo	11.51	33.86
Chakwale	14.63	30.54
<b>Average</b>	13.89	32.39

#### 4.5.2 Producers' share

Empirical findings revealed that the average producer's share of what the final consumer paid was high. The average producer' share for cattle was 85.45% and 61.17% for sheep and goats. Average wholesaler's share was 12.83% for cattle and 35.37% for sheep and goats, while butcher's shares were 13.89% for cattle and 32.99% for sheep and goats (Table 18). This means that 85.45% of final consumers' expenditure in cattle markets was received by producers and 14.55% went to the traders, 61.17% of final consumers' expenditure in sheep and goats markets was received by producers and 38.83% went to traders.

This welfare distribution between producers and traders indicates that all the markets were efficient for all types of livestock. This finding further implies that if

farmers could minimize costs of production, they could make more profits through the sales of their livestock than the wholesalers and butchers operating in the markets.

**Table 19: Morogoro Region: Averages of prices, marketing margins and percent of shares at different market levels**

Market levels	Cattle	Sheep and goats	Marketing margins for cattle (%)	Marketing margins for sheep and goats (%)	Percent of shares for cattle	Percent of shares for sheep and goats
<b>Producer</b>						
Selling price	320713	37 203.60	-	-	85.45	61.17
<b>Wholesalers</b>						
Buying price	319018	35 649.57	13.06	37.63	12.83	35.37
Selling price	366945	57 160.00				
<b>Butcher</b>						
Buying price	323200	40 757.64				
Selling price	375326	60 819.04	13.89	32.99	13.89	32.99
<b>Consumer</b>	375326	60 819.04	-	-	100	100.00

Note: The average buying prices of butchers do not differ much from that of wholesalers because about 80% butchers in Morogoro buy from farmers so do wholesalers.

### .5.3 Gross margin

The study attempted to ascertain the level of efficiency in livestock markets and relative economic profit obtained by livestock keepers and traders for the different types of livestock in the primary livestock markets. This was done by evaluating costs and prices at different levels of the market chain. At the farmers' level there was production as well as marketing costs, while traders had marketing costs. Since with cost based pricing method, prices are determined by the costs incurred in production and marketing for the case of farmers and in marketing for the case of traders, it is obvious that the costs will not necessarily be the same for all participants.

Results show that average gross margins obtained by farmers were Tsh 258 856 per cattle and Tsh 11 124 per each sheep and goat. Average market gross margin for cattle farmers was highest in Mkongeni (Tsh 291 437) and lowest in Parakuyo (Tsh 232 924) while for sheep and goats was highest in Nanenane (Tsh 13 716) and lowest in Parakuyo (Tsh 7 476). Similarly, average gross margins obtained by wholesalers were about Tsh 15 126 per cattle and Tsh 12 110 per each sheep and goat. Average market gross margin for cattle wholesalers was highest in Melela (Tsh 20 494) and lowest in Chakwale (Tsh 8 715), while for sheep and goats was highest in Parakuyo (Tsh 14 714) and lowest in Chakwale (Tsh 6 259). Butchers obtained a gross margin of about Tsh 33 090 per cattle and Tsh 11 427 per each sheep and goat (Appendices 4, 5 and 6).

Appendices 4, 5 and 6 further indicate that returns per shilling invested by farmers were about Tshs 5.18 and 1.43 for cattle and small ruminants (sheep and goats) respectively. For wholesalers was Tshs 1.04 for cattle and Tshs 1.27 for sheep and goats, while butchers received Tshs 1.10 for cattle and Tshs 1.23 for sheep and goats. The return per shilling invested by cattle farmers was highest in Mkongeni (Tshs 5.46) and lowest in Parakuyo (Tshs 4.89) while for sheep and goats farmers the return was highest in Melela (Tshs 1.54) and lowest in Parakuyo (Tshs 1.31). For cattle wholesalers was highest in Melela (Tshs 1.06) and lowest in Chakwale (Tshs 1.02). Sheep and goats wholesalers in Parakuyo had highest returns per shilling invested (Tsh 1.35) while those in Chakwale received the lowest return of Tshs 1.15.

Sheep and goats butchers received higher return per shilling invested (Tshs 1.23) while cattle butchers received (Tshs 1.10).

The implication here is that; First, all farmers and traders (wholesalers and butchers) got economic profit. Second cattle farmers got the highest economic profit per livestock sold followed by butchers and lastly wholesalers; the advantage of traders over farmers was the economies of scale they enjoyed. For sheep and goats, wholesalers led in economic profit followed by butchers and farmers were the last. The results further explain the least importance given by livestock farmers to sheep and goats as livestock kept for sale. Further more, the results revealed that with exception of sheep and goats wholesalers in Parakuyo, markets closer to main (tarmac) roads such as Mkongeni, Melela and Nanenane recorded higher gross margins in all types of livestock and hence were more efficient than those far away from main (tarmac) roads i.e Parakuyo and Chakwale. Similar results were observed in return per shilling invested by livestock farmers and wholesalers except for cattle farmers in Chakwale. Despite the aforementioned differences in efficiency between the markets and economic profitability between market participants, primary livestock markets in Morogoro Region can be said to be both efficient and profitable to all livestock farmers and traders (wholesalers and butchers).

#### **4.6 Strategies to improve efficiency in livestock markets**

Table 19 shows strategies proposed to improve efficiency in livestock markets.

**Table 20: Morogoro Region: Strategies to improve efficiency in livestock markets**

Item	Frequency	Percent
<b>Farmers' proposals</b>		
Use of weighing scales	26	65
Auction selling	6	15
Roads improvement	8	20
Attraction of traders	23	58
Fencing and marketing facilities	29	72
Presence of processing industries	9	22
Prohibition of farm gate business	6	15
Formal price information system	2	5
Availability of social services in the markets	4	10
Reduction of market fees	19	48
Farmers associations	20	50
Credit facilities	20	50
<b>Traders' proposals</b>		
Government control over fuel prices		
Building toilets, water and restaurants in the markets	14	40
Evidence of livestock ownership	3	9
Construction of modern abattoir in markets	2	6
License to be used instead of movement permits	2	6
Proper selling places	5	14
Fighting corruption in markets	5	14
	4	11

About 72 % of interviewed farmers proposed fencing of the market places and building of marketing facilities such as collection yards and loading facilities, 65% proposed use of weighing scales, 58% proposed attraction of traders from different areas, 50% availability of credits, 50% formation of farmers associations, 22% construction of processing industries, 20% improvement of roads to primary

livestock markets, 15% auction selling, 15% prohibition of farm gate business, 10% availability of social services such as water, toilets and restaurants, 48% reduction of market fees and 5% availability of formal price information systems. Out of the 35 traders responded to the question concerned improvement of efficiency in livestock markets, 40% proposed government control over fuel prices, 14% construction of proper selling places and license to be used instead of movement permits, 11% government to fight against corruption, 9% construction of social services like toilets, water and restaurants, 6% evidence of livestock ownership to avoid sales of stolen livestock and construction of modern abattoir in the markets.

The findings imply that, improvement of efficiency in livestock markets requires a number of strategies such as improvement of infrastructures like roads joining producers and primary markets and the markets to main roads. Remote location of most communal livestock producers coupled with poor road networks result in small number of traders attending markets as they fear high transport costs. Therefore, improvement of the roads is part and parcel of improvement of efficiency in livestock markets as it will attract livestock buyers to the markets. Attraction of buyers and sellers to the markets when coupled with a proper knowledge of the functions of the market, competition in the markets will be increased and hence efficiency in livestock markets. Similarly, market infrastructures in terms of buildings such as collection yards and loading facilities and instruments such as weighing scales are crucial in improving efficiency in livestock markets as these facilitate marketing operations in the markets.

Construction of fences around the markets is equally important because in livestock primary markets there are many cases of livestock running away from the market before or after sales. This situation causes inconveniences as some time farmers were required to go back home without selling the animals or the animals get lost.

Use of weighing scales and auction selling can bring about fair exchange in the markets, but some farmers were sceptical about the use of the weighing scales and auction selling because they suspect some unfaithful market officials to conspire with traders to exploit them. Hence, district councils should make sure that they closely supervise their market officials.

Most livestock traders and farmers were constrained with lack of capital. This is caused by difficult conditions for accessing loans set by financial institutions. Therefore, if the institutions will ease off the conditions, traders will increase their purchasing power and hence the efficiency in livestock markets.

Government has to formulate and reinforce policies that will stop exploitation of livestock farmers, for example formation of telephone market information centres for all farm produce will enable farmers to get current market information whenever they need. The government should also encourage construction of livestock processing industries, as that will create alternative markets for the livestock and consequently increase their demand and prices in the markets.

Farmers associations are also important in bringing efficiency in livestock markets as can help farmers to find better markets for their livestock and help their members to solicit loans from financial institutions, the loans can be used to improve quality of their livestock through breeding, feed supplementation and disease prevention so that they can get better prices. Since most of the farmers are not knowledgeable about associations, extension officers have to educate them on their importance, how to establish and run them. With farmers' cooperatives, extension educational activities can be carried out more efficiently because of a proper needs assessment and delivery methods that reached more target group per programming (Sadighi and Darvishinia, 2005).

## **CHAPTER FIVE**

### **5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Overview**

The general objective of this study was to assess efficiency in primary livestock markets and identify efficient market mechanisms which provide higher and more reliable returns to resource poor livestock keepers. Structure conduct and performance model (SCP) was employed to assess the efficiency in the primary livestock markets, where as gross margin analysis was put in use to determine profitability of the sector to the market participants and descriptive statistics such as frequency and percentage were used to identify efficient mechanisms which provide higher and more reliable returns to resource poor livestock keepers.

## **5.2 Summary of the major findings**

### **5.2.1 Livestock market structure**

The market for the livestock was unconcentrated or perfectly competitive. Capital requirements served as the main barrier to market entry. Direct visit to the primary markets and cross check with fellow livestock keepers were the main sources of market information concerning prices, demand and supply for the livestock farmers. Markets were somehow vertically integrated since many of the livestock traders coordinated production and marketing decisions in the industry.

### **5.2.2 Livestock market conduct**

There were two main market channels through which indigenous livestock move from the producer to the butcher which were from livestock keeper to butcher, the main one and minor one from livestock keeper to wholesaler to butcher. The study revealed that there were very few formal or informal marketing or producer groups needed to affect bargaining power. The only buying/selling practice in place was

first-come/first-serve. Sales on the markets are through the usual haggling over prices without weighing the animals or standardization.

Two different sale agreements between farmers and traders existed depending upon relationship between the parties, most of farmers sold on the basis of cash condition, while some farmers sold on the basis of both cash and credit. Most of the farmers who sold on credit had regular buyers. The terms of payment for the credit sales were without interest and the time of payment was one week. The main price setters were farmers. All farmers did not grade their livestock prior to selling. Price of livestock depended on different groups of factors as product differentiation was in the form of visual assessment of animal size, health and body condition score. Another group of factors affected livestock prices were seasonality and religious festivals. Physical location of the market in relation to other markets and transport facilities affected price and marketing arrangements.

### **5.2.3 Livestock market performance**

Butchers' marketing margins were relatively higher than that of the wholesalers for cattle and vice versa for sheep and goats. Comparing the marketing margins for the two categories of livestock; cattle and (small ruminants) sheep and goats; the marketing margin for cattle was lower in all of the five markets, which means that cattle markets were the most efficient. Empirical findings reveal that the average producer's share of what the final consumer paid was high in both categories of livestock. Gross margin analysis revealed that; First, all the farmers and traders (wholesalers and butchers) got economic profit; Second cattle farmers got the

highest economic profit per livestock sold followed by butchers and lastly wholesalers, while sheep and goats wholesalers led in economic profit followed by butchers and then farmers.

#### **5.2.4 Strategies to improve efficiency in livestock markets**

Among the strategies proposed by farmers to improve efficiency in livestock markets were fencing of the market places and building of marketing facilities such as collection yards and loading facilities, use of weighing scales, attraction of traders from different areas, availability of credits, formation of farmers associations, construction of processing industries, improvement of roads to primary livestock markets, auction selling, prohibition of farm gate business, availability of social services such as water, toilets and restaurants, reduction of market fees and availability of formal price information systems.

#### **5.3 Conclusion**

Despite the few weaknesses aforementioned in this study, primary livestock markets in Morogoro Region can be said to be perfectly competitive, efficient and profitable to all livestock farmers and traders (wholesalers and butchers). Therefore, if efforts are made to rectify the identified weaknesses, efficiency and profitability would be maximized and hence, provide higher and more reliable returns to resource poor livestock keepers.

#### **5.4 Recommendations**

Based on the findings of the study the following recommendations are made:-

- (i) District councils (market officials) should avail information about prices of livestock to market participants through radio, television, posters and at local

institutions such as other goods markets, churches, mosques and village gathering sites.

- (ii) District councils should make efforts to attract many buyers to the markets through advertisements, reduction of market fees and improvement of feeder roads joining the markets to main (tarmac) roads.
- (iii) District councils should improve security at the markets so that auctioning or bidding can be done without a fear of robbery to farmers.
- (iv) District councils should play more active role in the provision of physical infrastructure in the markets such as closed livestock sheds, bidding rings, weighing scales and fencing the markets.
- (v) District councils should enforce a decree on the use of weighing scales in all livestock markets so that consumers get the value of their money and farmers get the value of their livestock, alternatively, introduction of bidding rings with closely supervised bidders would facilitate fair pricing from competitive bargaining.
- (vi) Financial institutions should support entrepreneurship in livestock sector through credit financing schemes to livestock traders.
- (vii) Since efficiency in livestock markets starts at the level of livestock producers by providing good quality livestock, financial institutions should support the producers by accepting livestock to be used as collaterals.

## **5.5 Limitations of the study and suggestions for future research**

### **5.5.1 Limitations of the study**

This study attempted to investigate efficiency in livestock markets in Tanzania using primary livestock markets in Morogoro Region. The study findings give rough picture of efficiency in livestock markets in Tanzania. Therefore, interpretation of the results to generalize the situation in livestock markets for the whole of Tanzania should be taken with care due to the following reasons:-

First, some traders were reluctant to give certain information especially those related to their revenue. Similarly, some livestock farmers were reluctant to disclose the true number livestock they had and actual prices they sold their livestock. Further more, most farmers and traders either did not keep records or pretended so. Second, to escape market fees that traders had to pay in the markets, small traders (*garagaja*) who buy small number of livestock from farmers and sell to wholesalers and butchers in the primary markets normally introduced themselves as livestock keepers and were reluctant to be interviewed as (middlemen) traders. It was very difficult to identify them because they were Masai as were the livestock keepers and conducted their business in their vernacular.

Third, the survey was conducted from October to December 2008, the period comprised of a number of religious festivals namely, *Eid el-fitr*, *Eid el-haaj* and Christmas. This could have affected the trend of prices in the markets.

Fourth, vertical integration in the markets, the wide spread use of cell phones and being closer to Dar es Salaam (Pugu Terminal) might have influenced availability of price information in the region and hence the price of livestock in the markets.

Fifth, all the surveyed markets were easily accessible by roads through out a year, with three of them, Nanenane, Mkongeni and Melela Kibaoni being at less than one kilometer from tarmac roads.

Sixth, the survey was conducted shortly after harvest, hence there was no food shortage; therefore, very few agro-pastoralists were selling their livestock, this might also had contributed to higher prices in the markets.

Seventh, conflicts between crop farmers and pastoralists in Kilosa District and shortage of pasture due to inadequacy of the short rains (*vuli*) caused the pastoralists to shift to other areas and hence caused shortage of livestock in the primary livestock markets and therefore led to higher prices.

### **5.5.2 Suggestions for future studies**

Despite Tanzania being the third in Africa for having largest herds of livestock, supper markets in the country still import processed meat and milk from South Africa and Kenya which have small numbers of livestock. A serious study of factors that hinder construction of enough processing industries in Tanzania is needed to recommend strategies which can enable Tanzania produce quality meat for both domestic and export markets.

#### REFERENCES

- Ajala, M. K. and Adesehinwa, A. O. K. (2008). Analysis of Pig Marketing in Zango Katab Local Government Area of Kaduna State, Nigeria. *Tropicultura* 26(4): 229 – 239.

Ajala, M. K. and Adesehinwa, A. O. K. (2007). Roles and Efficiency of Participants in Pig Marketing in the Northern Part of Nigeria. *Journal of Central European Agriculture* 8(3): 311 - 326. [<http://www.agr.hr/jcea/issues/jcea8-3/pdf/jcea83-6.pdf>] site visited on 10/2/2009.

Alam, M. R. (2008). A Review of Animal Welfare Situation in Bangladesh. *Journal of Commonwealth Veterinary Association* 24 (2): 21 – 23.

Aleksandrva, A. and Lubys, J. (2004). *Application of the structure-conduct-performance: Paradigm in transition economy: Explaining reported profitability of the largest Latvian firms*. Stockholm School of Economics, Riga. 54pp.

Alive (2004). A Partnership for Livestock Development for Poverty Reduction and Economic Growth in Sub-Saharan Africa. *Draft of Concept Note*. [[http://www.wb258983.P:\!XCTRY\ALIVE\1.ALIVE documentation\general documentation\3. concept\Alive Concept Note\Alive Note Draft \(May28, 2004\).doc](http://www.wb258983.P:\!XCTRY\ALIVE\1.ALIVE documentation\general documentation\3. concept\Alive Concept Note\Alive Note Draft (May28, 2004).doc)] site visited on 9/8/2008.

Andersen, H. J., Oksbjerg, N. and Therkildsen, M. (2005). Potential quality control tools in the production of fresh pork, beef and lamb demanded by the European society. *Livestock Production Science* 94: 105 – 124.

Ashimogo, G. and Greenhalgh, P. (2007). Regoverning markets: small-scale producers in modern agri food markets. [<http://www.regoverningmarkets.org>.] site visited on 1/7/2008.

Ashimogo, G. C. (2005). *Advanced Agricultural Marketing*. Compendium for Postgraduate Studies. Sokoine University of agriculture, Morogoro, Tanzania. 57pp.

Bain, J. S. (1968). *Industrial Organization*. 2<sup>nd</sup> edition, John Wiley and Sons, New York. 258pp.

Bailey, D. V., Christopher, B. B., Peter, D. L. and Chabali, F. (1999). Livestock Markets and Risk Management among East African Pastoralists [<http://www.Aem.cornel.edu/fcultysites/cbb2/papers/livmkets.pdf>] site visited on 1/7/2008.

Bekure, S. and Tilahun, N. (1983). Pastoral systems research in sub-Saharan Africa. In: *Proceedings of the workshop held at ILCA, Addis Ababa Ethiopia*; (Edited by International Livestock Centre for Africa) 21-24 March 1983, Addis Ababa, Ethiopia. 327 - 352pp.

Boi, I. R. M. and Ashimogo, G. C. (2006). The contribution of livestock in rural poverty alleviation in Kilindi and Handeni Districts, Tanga Region, Tanzania. In: *Proceeding of 32<sup>nd</sup> Scientific Conference of the Tanzania society of animal production conference series (TSAP)*. (Edited by

Kidunda, R.S., Dr. Mbagi, S.H., Dr. Chenyambuga, S.W., Professor Kimambo, A.E., Professor Laswai, G.H. and Professor Kifaro, G.), 24 - 26 October 2006, Kilimanjaro Crane Hall, Moshi, Tanzania. 10 - 21pp.

Carlton, D. W. and Perloff, J. M. (2005). *Modern International Organization*. Fourth Edition. Pearson Addison- Wesley, New York, USA. 822pp.

Coetzee, L., Montshwe, B. D. and Jooste, A. (2004). The marketing of livestock on communal lands in the Eastern Cape Province: Constraints, challenges and implications for extension services. *South African Journal of Agricultural Extension* 34(1): 81 – 103.

Fafchamps, M. and Madhin, E. G. (2006). Agricultural markets in Benin and Malawi. *African Journal of Agricultural and Resource Economics* 1 (1): 67 – 94.

FAO (2003). *FAO Bulletin of statistics*. Vol. 4 No.1 Rome, Italy.115pp.

The Florida Senate (FLS) (2008). Regulation of trade, commerce, investments, and solicitations: Livestock markets and brands; stamping beef. [<http://www.fsenate.gov>] site visited on19/3/2009.

Florida Public Service Commission (FPSC) (2001). *Market Power in Transitioning Electronic Industry*. Prepared by Division of Policy Analysis and Intergovernmental Liaison. Florida, USA, March 2001.12pp.

Goodman, C. A. (2004). An Economic analysis of retail market for fever and malaria treated in rural Tanzania. Thesis for Award of PhD Degree at London School of Hygiene and Tropical Medicine, University of London, UK, 351pp.

Gujarat, D. N. (Eds.) (1993). *Basic Econometrics*. McGraw. Inc., New York. 750pp.

International Livestock Research Institute (ILRI) (1995). Livestock Policy Analysis. ILRI Training Manual 2 ILRI, Nairobi, Kenya. [[http://www.ilri.org/html/trainingMat/policy\\_X5547e/5542b/5542e.htm](http://www.ilri.org/html/trainingMat/policy_X5547e/5542b/5542e.htm).] site visited on 1/7/2008.

Jabbar, M., Benin, S., Gabre-Madhin, E. and Paulos, Z. (2008). Market Institutions and Transaction Costs Influencing Trader Performance in Live Animal Marketing in Rural Ethiopian Markets. *Journal of African Economics* 17(5): 747 – 764.

Juma, G. P., Drucker, A. G., Baltenweck, I. and Ngigi, M. (2006). Market power and efficiency in indigenous small ruminant marketing channels in Marsabit, Kenya. [[http://www.community.eldis.org/dsa/028\\_Juma\\_Market\\_analysisads.doc](http://www.community.eldis.org/dsa/028_Juma_Market_analysisads.doc)] site visited on 10/2/2009.

Kaitho, R. J., Eddleman, B. R., Chen, C. C., Mearl, B. A., Angerer, J. and Stuth, J. W. (2001). Policy and technology options for dairy systems in East Africa: Economic and environment assessment: A paper presented to the

SANREM CRSP research scientific synthesis conference. [<http://www.Sanrem.Uga.edu./sanrem/conference/nor2001/waf.policy.htm>] site visited on 12/7/2008.

Kohl, R. L. and Uhl, J. N. (1990). *Marketing of Agricultural Products*. Macmillan Publishing Company, New York. 385pp.

Kristiansen, S. (2007). Entry barriers in rural business: The case of egg production in Eastern Indonesia. *Journal of Entrepreneurship* 16(1): 53 – 76. [<http://www.Joe.sagepub.com>] site visited on 16/3/2009.

Mafuru, J. M., Kaganda, S. R. and Tungu, G. B. (2006). Cattle Marketing in Shinyanga Region, Tanzania. In: *Proceedings of 32<sup>nd</sup> Scientific Conference of the Tanzania society of animal production conference series (TSAP)*. (Edited by Kidunda, R.S., Dr. Mbaga, S.H., Dr. Chenyambuga, S.W., Professor Kimambo, A.E., Professor Laswai, G.H. and Professor Kifaro, G.), 24- 26 October 2006, Kilimanjaro Crane Hall, Moshi, Tanzania. 62 - 72pp.

Mahabile, M., Lyne, M. and Panin, A. (2002). Factors affecting the productivity of communal and private farmers in Southern Botswana: A descriptive analysis of sample survey results. *Agreko* 41(40): 326 – 338.

Mapiye, C., Chimonyo, M., Muchenje, V., Dzama, K., Marufu, M. C. and Raats, J.G. (2007). Potential for value-addition of Nguni cattle products in

commercial areas of South Africa. *African Journal of Agricultural Research* 2(10): 488 – 495.

Mapunda, F. M. (2007). Economic evaluation of existing and potential market opportunities for quality beef in Tanzania: A case of Dar es Salaam and Arusha cities. Dissertation for Award of Msc Degree at Sokoine University of Agriculture, Morogoro, Tanzania. 100pp.

Massawe, S. (2007). Assessment of food market structures and their implication to household food security in Rufiji district. Dissertation for Award of Msc Degree at Sokoine University of Agriculture, Morogoro, Tanzania. 107pp.

Matola, F. B. (2005). Towards an entrepreneurial economy for Tanzania. *Journal of Tanzania Association of Accountancy* 17(1): 17 – 20.

Mcfalls Jr, J. (2003). A Lively Introduction. *Population Journal* 58(4): 4 – 35.

Mlambiti, M. E. (1999). Optimization of inputs and output markets in Tanzania and its effects on improvement of rural livelihoods. In: *Proceedings of the Fourth Annual Research Conference of the Faculty of Agriculture*. 17 – 19 November 1999, Horticulture Multipurpose Hall, Sokoine University of Agriculture, Morogoro, Tanzania. 11 - 23pp.

Mlote, S. (2006). Livestock marketing for economic growth and poverty reduction in Tanzania: Sub theme: Marketing of livestock and livestock products.

In: *Proceeding of 32<sup>nd</sup> Scientific Conference of the Tanzania society of animal production conference series (TSAP)*. (Edited by Kidunda, R.S., Dr. Mbagwa, S.H., Dr. Chenyambuga, S.W., Professor Kimambo, A.E., Professor Laswai, G.H. and Professor Kifaro, G.), 24 -26 October 2006, Kilimanjaro Crane Hall-Moshi, Tanzania. 50 - 61pp.

Mnyang, V. M., Okeke, I. and Williams, T. O. (2005). Effective dimensionality and factors affecting crop-livestock integration in West African savanna: A combination of principal component analysis and Tobit approaches. *Agricultural Economics*. 35: 145 – 155.

MOA, (2000). Basic Data. Agriculture and Livestock Sector 1992-1998/99. Ministry of Agriculture Library, Dar es Salaam, Tanzania. February 2009. 66pp.

Montshwe, B. D. (2006). Factors affecting participation in mainstream cattle markets by small-scale cattle farmers in South Africa. Dissertation for Award of MSc Degree at University of Free State, Bloemfontein, South Africa, 120pp.

Morogoro Region Social –Economic Profile (2002). National Bureau of Statistics (NBS) and Morogoro Regional Commissioner’s Office. 73pp.

Mugivane, F. I. and Ogara, W. O. (2007). Current challenges and opportunities in livestock and product marketing in Kenya. *Journal of Commonwealth Veterinary Association* 23(2): 51 – 57.

Murkas, M. S. (1993). *Elementary econometrics theory, Application and Policy*. East African Publishers, Nairobi. 647pp.

Musemwa, L., Mushunje, A., Chimonyo, M., Fraser, G., Mapiye, C. and Muchanje, V. (2008). Nguni cattle marketing constraints and opportunities in the communal areas of South Africa: Review. [<http://www.academicjournals.org/AJAR>] site visited on 16/3/2009.

Mushi, D. E., Mtenga, L. A., Kifaro, G. C., Eik, L. O., Ndemandisho, E. E., Maeda-Machang'u, Kassuku, A. A., Kimbita, E. N. and Muhikambe, V. R. M. (2004). Studies on marketing of meat goats- a case study of Gairo auction markets. In: *Proceeding of 31<sup>st</sup> Scientific Conference of the Tanzania society of animal production conference series (TSAP)*. (Edited by Mbagi, S.H., Mtenga, L.A., Laswai, G., Kimambo, A.E., Mgheni, D. and Kakengi, A.M.V.), 5 - 7 October 2004, Kilimanjaro Crane Hall, Moshi, Tanzania. 244 - 252pp.

Mworia, J. K. and Kinyamario, J. J. (2008). Traditional strategies used by pastoralists to cope with la nina induced drought in Kaijado, Kenya. *African Journal of Environmental Science and Technology* 2(1): 10-14 [<http://www.academicjournal.org/Ajest>] site visited on 11/3/2009.

National Department of Agriculture NDA. (2005). Red Meat Marketing [[http://www.nda.agric.za/docs/Market Extension/7Livestock.pdf](http://www.nda.agric.za/docs/Market%20Extension/7Livestock.pdf)] site visited on 10/2/2009.

National Emergent Red Meat Producers Organization (NERPO) (2004). Marketing infrastructure development [<http://www.nerpo.org.za>] site visited on 10/2/2009.

Odhiambo, M. (2006). Review of literature on Pastoral Economics and Marketing: Kenya, Tanzania, Uganda and Sudan. [<http://www.wisp.org>] site visited on 8/7/2008.

Phiri, C. D. (1991). An evaluation of smallholder farming systems in Chinguluwe settlement scheme in Malawi. Issue in Africa Social Network. 84 - 104pp.

Piadozo, M. E. S., Fujishima, H., Fujimoto, A. and Shimizu, K. (2007). Problems of the Marketing System for Vegetables Grown in the Highlands in the Philippines: A Case Study of Vegetables Grown in Bunguet and Laguna. *Journal of Rural Community Studies* 3(104): 102 - 112.

Pomeroy, R.S. and Trinidad A.C. (1995). Industrial Organization and Market Analysis: Fish Marketing. In: *Price, Product and People. Analyzing Agricultural market in Developing Countries*. (Edited by Scott.G. J. Rienner, L). 217 - 238 pp.

Puthira Prathap, D., Rajendiran, A. S. and Gour, D. (2008). An analysis of the Attitude of Three Districts of Tamil Nadu, India towards Sheep Farming. *Tropicultura*, 26(2): 108 - 112.

- Raad, P. and Karami, D. E. (2006). Linking Agricultural Research with Extension: Iranian Agricultural Researcher's Attitude Towards Collaboration with Extension Workers. *Journal of Agricultural Science and Technology, Islamic Republic of Iran*. 8(1): 35 – 46.
- Rahmann, G. and Seip, H. (2007). Bioactive forage and phototherapy to cure and control endo-parasite diseases in sheep and goat farming systems- a review of current scientific knowledge. *Landbauforschung Volkenrode* 3(57): 285 - 295.
- Sadighi, H and Darvishinia, A.A. (2005). Farmers' professional satisfaction with the rural production cooperative approach. *Journal of Agricultural Science and Technology, Islamic Republic of Iran* 17(1&2): 1 - 8.
- Scarborough, V. and Kydd, J. (1992). *Economic Analysis of Agricultural Markets: A manual*. Natural Resource Institute (NRI). Marketing Series Volume No. 5. Cathan, U.K. 166pp.
- Scott, G.J. (editor) (1995). *Press, Product and People; analyzing agricultural markets in developing countries*. Lynne Rienner Publishers. Inc, USA. 479pp.
- Smith, I.R. (1981). *The economics of the milkfish fry and fingerling industry of the Philippines. ICLARM Technical Reports 1*. International Center for Living Aquatic Resources Management, Manila and Aquaculture Department

(ICLARM), Southeast Asian Fisheries Development Center, Iloilo Philippines. 148pp.

Somano, W. (2008). Dairy marketing chains analysis: The case of Shashemane, Hawassa and Dale District's milk shed, Southern Ethiopia. Dissertation for Award of Msc Degree at School of Graduate Studies, Haramaya University, Ethiopia, 132pp.

Staats, J., Raper, K. and Weber, M. (2006). AEC 841: Analysis of food system organization and performance. Lecture notes. Department of Agricultural Economics Michigan State University, USA. [<http://www.msu.edu/course/ec/841/notes.htm>] site visited on 15/7/2008.

University of Dar es Salaam Entrepreneurship Course (UDEEC). (2005). *Agribusiness lecture notes*, Dar es Salaam. 40pp.

United Republic of Tanzania. (2006). Ministry of Livestock Development. Nation Livestock policy.[[http://www.drd.mafs.org\\_tz\\_mafs\\_policy.pdf](http://www.drd.mafs.org_tz_mafs_policy.pdf).] site visited on 8/7/2008.

United Republic of Tanzania. (2003). *Morogoro Regional Socio Economic Profile*. National Bureau of Statistics Presidents Office DSM, 39pp.

United Republic of Tanzania. (2002). Population and housing Census 2002. Regional Census General

report[<http://www.tanzania.go.tz/census/regions/districts>] Site visited 27/9/2008.

Van den Bos, G. (2004). Stock Theft: We are winning slowly but surely. *South African Police Service Journal*. [[http://www.saps.gov.za/docs\\_publics/publications/journalseptock04/index.htm](http://www.saps.gov.za/docs_publics/publications/journalseptock04/index.htm)] site visited on 18/3/2009.

Vezina, A. (2005). Info Musa. *International Journal on Banana and Plantain* 14: 41 - 44.

Williams, T.O., Spycher, B and Okike, I. (2006). Improving livestock marketing and intra-regional trade in West Africa. Determining appropriate economic incentives and policy framework. ILRI (International Livestock Research Institute), Nairobi, Kenya. 122pp.

## APPENDICES

### **Appendix 1: Questionnaire for livestock keepers (Farmers)**

Questionnaire No.....date of interview.....

Interviewer's name.....

**A: General information**

- 1 Name of the primary livestock market.....
- 2 Respondent's name.....Gender.....Age.....(years)
- 3 Village.....Ward.....Division.....District.....
- 4 Level of education (indicate by putting a tick):

None	Primary	Ordinary Secondary	Advanced Secondary	Diploma	Degree	Other (specify)

5 Marital status (indicate by putting a tick):

Single	Married	Widowed	Divorced	Separated

6 Household size (number of household members).....

**B: Production costs**

**B 1: Management practices**

- 7 What management practices do you use? ( )
- a) Pastoral system
- b) Agro- pastoral system
- c) Others (specify)

8a Are there management practices that are used now but not used in the past five years?  
( ) 1= Yes; 2=No

8b If yes, complete the following table:

Management practice	Reason

9a Are there Management practices that were used in the past five years but not used now? ( ) =Yes; 2=No

9b If yes, complete the following table:

Practice	Reason

**B 2: Types of livestock**

10 Mention types of livestock you keep

- 1. ....
- 2.....
- 3.....
- 4.....

11a Are there livestock that are kept now but not kept in the past five years? ( ) 1= Yes; 2=No

11b If "Yes" or "No", complete the following table:

Type of livestock	Reason

12a Are there livestock that were kept in the past five years but are current not kept?

( ) 1= Yes; 2=No

12b If “Yes” or “No”, complete the following table:

Type of livestock	Reason

**B 2: Cots for livestock production**

13 What is your main source of labuor used in production?

Code	Source of labuor	Amount	Payment (Tsh/week)	Payment (Tsh/month)

14a Do you use any input in your livestock production? ( ) 1= Yes; 2=No

14b If yes, mention them

- 1) .....
- 2) .....
- 3) .....

14c If yes, where do you get the inputs?

- a) Private traders
- b) Cooperatives
- c) Government agencies

14d What is the trend of input distribution in your area? ( ) 1= Increasing; 2=Decreasing; 3=Same

15 Input costs per month.

Livestock type	Name of input	Quantity used	Price per unit
		A	B
Total			

**C: Markets for livestock**

**C 1: Market channels**

16 What channels are used in selling the livestock? ( )

- a) Livestock keeper to butcher
- b) Livestock keeper to wholesaler to butcher
- c) Livestock keeper to livestock keeper
- d) All of the above channels

17 If you sell to more than one buyer, which one offers better prices? ( )

- a) Butcher
- b) Wholesaler
- c) Other livestock keepers

18a Do you have a choice of buyers to sell your livestock? ( ) 1= Yes; 2=No

18b If no, why?

.....  
 .....  
 19a Do you think the prices offered to you are the same as to the one offered when a certain trader buys from another trader a similar livestock? ( ) 1= Yes; 2=No  
 19b If no, what could be the reasons?

- 1) .....
- 2) .....
- 3) .....

20a Is an access to the market a problem? ( ) 1= Yes; 2=No  
 20b If yes, give reasons

- 1) .....
- 2) .....
- 3) .....

**C 2: Prices**

21 To what extent do you know about livestock prices prevailing in the market?

- a) Very well
- b) Not very well
- c) No idea

22 How do you price your livestock? .....

23a What is the price trend of your livestock for past five years? ( )

- a) Increasing
- b) Decreasing
- c) Same

23b What do you think could be the reasons for the increase or decrease?

Reason for increase	Reason for decrease
1.	1.
2.	2.
3.	3.

**C 3: Returns**

24 What average number of livestock do you sell per year?

Livestock type	Amount sold	Average price per livestock (Tsh)

25a Do you keep records for your livestock keeping activities? ( ) 1= Yes; 2=No

25b From your records or memory, complete the following table:

Year	Type of livestock	Number of livestock kept	Number of livestock consumed	Number of livestock sold	Price received per animal
2007	1				
	2				
	3				

26a Apart from livestock keeping do you have any other income generating activity?  
 ( ) 1= Yes; 2=No

26b If yes, give reasons

.....  
 .....

26c If yes to question 40a, complete the following table?

Activity	Revenue per month

**D: Other factors that affect livestock production and marketing**

27 What are the important factors that affect or influence your livestock production?

- ( )
- a) Availability of inputs
  - b) Increased farm gate prices
  - c) Diseases
  - d) Availability of pasture and extension services

28a Where did you get capital for your livestock keeping?

- a) Given by relatives
- b) Livestock sales
- c) Loans
- d) Others (specify)

28b Capital requirements

Type of investment on production	Average capital (Tsh)
<b>Total</b>	

29a Do you belong to belong to any credit scheme? ( ) 1= Yes; 2=No

29b If yes, complete the following table

Name of scheme	Type of scheme

29c Borrowing conditions and purpose of borrowing

Last amount borrowed		Purpose of borrowing
Interest rate		
Loan repayment period		
Grace period		

30a Does the scheme allow for saving? ( ) 1= Yes; 2=No

30b If yes, do you have any saving at the scheme? ( ) 1= Yes; 2=No

30c If yes, what amount of saving do you have? .....Tsh

31a As a livestock keeper, do you have any association? ( ) 1= Yes; 2=No

31b If yes, what activities does the organization perform?

- 1) .....
- 2) .....
- 3) .....

31c What are the benefits do you get by being a member of the organization?

- 1) .....
- 2) .....
- 3) .....

31d Are there conditions for joining the organization? ( ) 1= Yes; 2=No

31e If yes, mention them

- 1) .....
- 2) .....
- 3) .....

32a Do you get extension services? ( ) 1= Yes; 2=No

32b Are there any benefits from services provided? ( )1= Yes; 2=No

32c If yes, what are they?

- 1) .....
- 2) .....
- 3) .....

32d If no, give reasons

- 1) .....
- 2) .....
- 3) .....

33a How do you get market information? ( )

- a) Cross check with middlemen
- b) Direct visit to the primary market
- c) Cross check with fellow livestock keepers?
- d) Others (specify)

33b Which market information do you usually look for?

- 1) .....
- 2) .....
- 3) .....

34 What factors do you consider when you decide to sell your livestock?

- 1) .....
- 2) .....
- 3) .....

35a Who are the major consumers of your livestock?

- 1) .....
- 2) .....
- 3) .....

35b Do you sell your livestock to the same customers? ( ) 1= Yes; 2=No

35c Give reasons for your answer:

.....

36a How do you get paid? ( ) 1= Cash; 2=Credit; 3= Both 1 and 2

36b If on credit , what are the terms of payments?( ) 1=With interest 2=Without interest

36c What is the payment period .....(days)

37a Do you have selling plan for your livestock? ( ) 1= Yes; 2=No

37b Give reasons

.....

38a Do you grade your livestock prior to selling? ( ) 1=Yes2= No

38b If yes, who does the grading?

.....

38c What are the grade characteristics?

- 1) .....
- 2) .....
- 3) .....

38d How do you price your livestock regarding to the grade

Type of livestock	Grade type			Price per grade per animal		

39a Do you weigh your livestock prior to selling? ( ) 1= Yes; 2=No

39b If “No” to (Questions 38 and 39) what factors do you consider in pricing your livestock?

- 1) .....
- 2) .....
- 3) .....

39c Why do not you use a weighing balance prior to selling your livestock? ( )

- a) The weighing balances are not available
- b) The weighing balances are not trustworthy
- c) The weighing balances delay the selling activities

40a How far is this primary livestock market from your farm?

..... (Km)

40b How do you transport your livestock to the primary livestock market?

- a) By tracking
- b) By lorries
- c) By train

41a Does the primary livestock market provide any service to your livestock? ( )

1= Yes; 2=No

41b If yes, mention them;

- 1) .....
- 2) .....
- 3) .....

42 What do you do to the livestock if you could not sell them during the market time?

.....

**E: Comments**

43 Give your comments on what should be done to improve livestock production

- 1) .....
- 2) .....
- 3) .....
- 4) .....

44 Give your comments on what should be done to improve livestock marketing

- 1) .....
- 2) .....
- 3) .....
- 4) .....

**THANK YOU FOR YOUR COOPERATION**

**Appendix 2: Questionnaire for livestock traders**

Questionnaire No.....date of interview.....

Interviewer’s name.....

**A: General information**

- 1 Name of the primary livestock market.....  
 2 Respondent's name.....Gender.....Age.....(years)  
 3 Village.....Ward.....Division.....District.....

4 Level of education (indicate by putting a tick):

None	Primary	Ordinary Secondary	Advanced Secondary	Diploma	Degree	Other (specify)

5 Marital status (indicate by putting a tick):

Single	Married	Widowed	Divorced	Separated

**B: Marketing operation**

**B 1: Types of livestock and business level**

6 Type and source of livestock traded?

Type of livestock	Source of livestock

7 Business level ( ) 1= Butcher; 2= Wholesale

8 Nature of the business ( ) 1= Full time; 2=Part time

9 For how long have you been involved in livestock trading?

..... years.

**B 2: Volume of livestock handled**

10 What amount of livestock handled (current and last month)?

Type of livestock	Current month	Last month	Average amount

11a Are there difficulties in getting the livestock? ( ) 1= Yes; 2=No

11b If yes, what could be the reasons?

- 1) .....  
 2) .....  
 3) .....

**B 3: Market(s) to sell**

12 From whom do you buy the livestock?

- 1) .....  
 2) .....

13 How do you transport your livestock to the market?

.....

14 To whom do you sell the livestock?

- 1) .....  
 2) .....  
 3) .....

15 What average number of livestock do you sell per month?

Livestock type	Amount sold	Average buying price	Average selling price

16a Do you keep records for your livestock business? ( ) 1= Yes; 2=No

16b If yes, complete the following table:

Year	Type of livestock	Average number of livestock sold	Average buying price per animal	Average selling price per animal
2007	1 2 3			

17a What kind of measurement do you use when selling your livestock?

- 1) .....
- 2) .....
- 3) .....

17b If no measurements used, what factors do you consider in selling your livestock?

- 1) .....
- 2) .....
- 3) .....

18a Do you grade your livestock prior to selling? ( ) 1= Yes; 2=No

18b If yes, what are the grade definitions?

Livestock name	Grade name	Grade characteristics	Price per grade defined

19a Are there barriers to market entry? ( ) 1= Yes; 2=No

19b If yes, what are they?

- a) Knowledge
- b) Capital
- c) Others (specify)

20 How do you get information on primary livestock market prices? ( )

- a) Through media
- b) Direct visit to the primary livestock market
- c) Cross check with other traders
- d) Others (specify)

21a Who set livestock prices?

- a) One buyer
- b) Many buyers
- c) Sellers

21b What factors are considered in price setting?

- a) Basic supply and demand conditions
- b) Long stand business relationship
- c) Others (specify)

22a Is there price differentiation? ( ) 1= Yes; 2=No

22b If yes, what is the basis for price differentiation?

- a) Age of the animal
- b) Sex of the animal
- c) Body appearance of the animal

23 What are the prices of livestock in various seasons?

Livestock name	Wet season		Dry season	
	Buying price per animal(Tsh)	Selling price per animal(Tsh)	Buying price per animal(Tsh)	Selling price per animal(Tsh)


24a Are there constraints in the use of specific market channels? ( ) 1= Yes; 2=No

24b If yes, give examples

.....  
 .....

25 Does the physical location of the market affect prices and marketing arrangements?

( ) 1= Yes; 2=No

26 What factors do you consider in buying or selling your livestock?

- a) Accessibility of the market place
- b) Prices on which you are going to sell
- c) Quality of the livestock
- d) Others(specify)

27 How do you pay or get paid for your products or services? ( )

- a) Cash (b)Credit (c) Others (specify)

28a Do you have any livestock traders' organization? ( ) 1= Yes; 2=No

28b If yes, complete the following table:

Name of organization	Activities	Benefits	Entry conditions

29a Are there formal or informal marketing or producer groups that affect bargaining power? ( ) 1= Yes; 2=No

29b If yes, mention them;

- 1) .....
- 2) .....
- 3) .....

29c List any observed unethical trading practices?

- 1) .....
- 2) .....

30 What buying/selling practices are in place? ( )

- a) Auction sale
- b) Contract sale
- c) First-come/first-serve

31a How many livestock traders do you think are operating at this primary market including yourself?.....

31b What kind of livestock do other traders have?

- 1) .....
- 2) .....
- 3) .....

31c What amounts of livestock do they possess?

- a) Large
- b) Average
- c) Minimum

32 How does government help or affect your business?

- 1) .....
- 2) .....
- 3) .....

33a Do you face any problem(s) in marketing your livestock? ( ) 1= Yes; 2=No

33b If yes, complete the following table:



**THANK YOU FOR YOUR COOPERATION.**

**Appendix 3: Morogoro Region: Price of livestock, distance from main road to primary market, amount of traders in the market, transport cost to second level market and market fees**

Item	Name of primary market				
	Nanenane	Mkongeni	Melela	Chakwale	Parakuyo
Distance from main road (Km)	0.5	0.1	0.1	10	27.5
Price of cattle (Tsh)	324 150	356 714	320 000	310 000	292 700
Number of cattle traders	38	96	45	43	25
Transport cost of cattle to second level market (Tsh)	26 430	26 430	25 625	29 350	30 000
Market fee for cattle (Tsh)	2 500	2 750	2 750	1 750	1 750
Price of sheep and goats (Tsh)	43 250	41 675	34 000	35 175	31 918
Number of sheep and goats traders	25	27	18	21	12
Transport cost of sheep and goats traders to second level markets (Tsh)	7 000	7 500	7 500	8 000	8 000
Market fees for sheep and goats (Tsh)	1 000	750	750	750	750

**Appendix 4: Morogoro Region: Averages of production costs, marketing costs and gross margins for cattle and small ruminants (sheep and goats) farmers (Tsh).**

<b>Item</b>	Nanenane	Mkongeni	<b>Markets</b> Melela	Chakwale	Parakuyo	Average
<b>Average production costs per animal</b>						
<b>Cattle</b>						
Labour (Herds man)	17 295	19 175	19 055	16 995	17 480	18 000
Treatment	1 574	1 584	1 700	1 625	1 612	1 619
Sub total	18 869	20 759	20 755	18 620	19 092	19 619
Sub total x3	56 607	62 277	62 265	55 860	57276	58 857
<b>Marketing costs</b>						
Transport to primary market	3 500	3 000	3 000	3 000	2 500	3 000
<b>Total variable costs (a)</b>	60 107	65 277	65 265	58 860	59 776	61 857
Average selling price (Revenue)(b)	324 150	356 714	320 000	310 000	292 700	320 713
Gross margin/animal	264 043	291 437	254 735	251 140	232 924	258 856
<b>Return/shilling Invested (b/a)</b>	5.39	5.46	4.90	5.27	4.89	5.18
<b>Sheep and goats</b>						
Labour	13 553	12 888	10 163	12 117	11 279	12 000.0
Treatment	714	719	359	464	442	539.7
Sub total	14 267	13 607	10 522	12 581	11 721	12 539.7
Sub total x2	28 534	27 214	21 044	25 162	23 442	25 079.4
<b>Marketing costs</b>						
Transport to primary market	1 000	1 000	1 000	1 000	1 000	1 000.0
<b>Total variable costs (c)</b>	29 534	28 214	22 044	26 162	24 442	26 079.4
Average selling price (Revenue) (d )	43 250	41 675	34 000	35 175	31 918	37 203.6
<b>Gross margin/ animal</b>	13 716	13 461	11 956	9 013	7 476	11 124.2
<b>Return/ shilling invested (d/c)</b>	1.46	1.48	1.54	1.34	1.31	1.43

**Appendix 5: Morogoro Region: Averages of marketing costs and gross margins  
for cattle and small ruminants (sheep and goats) wholesalers  
(Tsh).**

Item	Markets					
Average variable costs per animal	Nanenane	Mkongeni	Melela	Chakwale	Parakuyo	Average
<b>Cattle</b>						
Average buying price	298 805	348 538	32 9138	298 471	320 138	319 018
Market fees	2 500	2 750	2 750	1 750	1 750	2 300
Transport to secondary markets	26 430	26 430	25 625	29 350	30 000	27 567
Loading and unloading	3 000	3 357	2 937	2 625	2 750	2 934
<b>Marketing costs</b>	31 930	32 537	31 312	33 725	34 500	3 2801
<b>Total variable costs(e)</b>	330 735	381 075	360 450	332 196	354 638	35 1819
Average selling price(Revenue)(f)	348 412	399 604	380 944	34 0371	36 392	366 945
Gross margin/animal	17 677	18 529	20 494	8 175	10 754	15 126
Return per shilling (f/e)	1.05	1.05	1.06	1.02	1.03	1.04
<b>Sheep and goats</b>						
Average buying price	40 078	4 1545	33 845	31 055	31 725	35 649.6
Market fees	1 000	750	750	750	750	800
Transport to secondary markets	7 000	7 500	7 500	8 000	8 000	7 600
Loading and unloading	1 000	1 000	1 000	1 000	1 000	1 000
<b>Marketing costs</b>	9 000	9 250	9 250	9 750	9 750	9 400
Total variable costs(g)	49 078	50 795	43 095	40 805	41 475	45 049.6
Average selling price(Revenue)(h)	63 231	63 184	56 131	47 064	56 189	57 160
Gross margin/animal	14 153	12 389	13 036	6 259	14 714	12 110.4
Return per shilling (h/g)	1.29	1.24	1.3	1.15	1.35	1.27

**Appendix 6: Morogoro Region: Marketing costs and gross margins for cattle and small ruminants (Sheep and goats) butchers in Morogoro Region (Tsh)**

Item	Cattle	Sheep and goats
<b>Average variable costs per animal</b>		
Buying price	323 200	40 757.64
Marketing fees	2 333.33	812.5
Transport to abattoir	5 479.17	1 500
Slaughter fees	2 500	1 000
Transport to selling place	2 270	653.9
Labour/day (Sales man)	3 120	2 192.31
Rent per day	895.83	333.33
Others ( e.g. packing materials)	2 437.5	2 142.86
<b>Average total variable costs (i)</b>	<b>342 236</b>	<b>49 392.54</b>
Average selling price (Revenue) (j)	375 326	60 819.04
<b>Gross margin per animal</b>	<b>33 090.2</b>	<b>11 426.5</b>
<b>Return per shilling invested by butchers (j/i)</b>	<b>1.1</b>	<b>1.23</b>

**Appendix 7: Morogoro Region: State of important structures in livestock markets**

Item	Primary livestock market				
	Nanenane	Mkongeni	Melela	Chakwale	Parakuyo
Fence	Absent	Absent	Absent	Absent	Absent
Livestock sheds	Present	Present	Absent	Absent	Absent
Bidding ring	Pr.Nu	Pr.Nu	Absent	Absent	Absent
Weighing scale	Absent	Absent	Absent	Absent	Absent
Water troughs	Absent	Absent	Absent	Absent	Absent
Loading facilities	Absent	Present	Absent	Absent	Absent
Slaughter slabs	Absent	Present	Absent	Absent	Absent
Toilets	Present	Present	Absent	Absent	Absent
Butchers	Absent	Absent	Absent	Absent	Absent

N.B: Pr.Nu = Present but not used