CHAPTER ONE

1.1 Background of the study

Ethiopia ranks first in Africa and tenth in the world with respect to livestock population (Berhanu et al, 2007).The total cattle population for the country is estimated to be about 55 million (CSA, 2014). Female cattle constitute about 55 percent, and the remaining 45 percent are male cattle; 27 million sheep are estimated to be found in the country, out of which about 73 percent are females, and the rest are males. The number of goats reported in the country is estimated to be about 28 million, and 71 percent are females and about 29 Percent are males (CSA, 2014).

Livestock performs multiple functions in the Ethiopian economy by providing food, input for crop production, and soil fertility management, raw material for industry, cash income as well as in promoting saving, fuel, social functions and employment (Akililu et al, 2012).

Smallholders in the country majorly depend on livestock and this includes the Pastoral and Agro-pastoral communities. Since pastoralists hold most of their wealth in the form of livestock, markets for animals exert considerable influence over their livelihoods, because market establishes the value of their assets; and it also affects herd management decisions (Barrett,2001).

Pastoralists, in addition to using livestock as a source of food and as a form of saving and wealth, sell animals in needs of cash. The incomes that they generate diversifies the capital base but also livelihoods. This means livestock market and price levels have a crucial impact on the welfare of livestock keepers.

Prices are very important measure of livestock market performance and efficiency, and serve as indicators of producers' incentives and as a basis to generate government revenue from the livestock market related services (Jabbar et al,2003) Knowledge of these factor helps to develop strategies targeting development interventions that will enable improvement in the pastoralists share from the total prices of livestock, thus motivate pastoralist to produce better quality animals and as well as change their marketing behavior(Hailemariam, 2008). Nevertheless, there

has been a limited empirical knowledge regarding what determine the market price of livestock in many of the pastoral and agro-pastoral areas in the regional state of the Southern Nationals and Nationalities and People (SNNP).The available information, if any, on livestock pricing is inadequate and insufficient for designing pricing procedures, policies and institutions that are meant to improve the livestock marketing system (Solomon, 2004).Therefore, in order to close the gap this research focused on identifying the factors that determine the market price of cattle in south-western Ethiopia, specifically the Hammer Woreda, Dimeka market. It also examines the current state of the market facilities in the livestock market locations.

1.2 Statement of the problem

The most commonly quoted measures of the importance of an economic sector or industry is the size of its contribution to the national Gross domestic products (Behnke, 2012). However, the relative contribution of the sub sector was not as such as expected due to a number of factors. Among the lists, Pricing of the economic value of assets can be mentioned as major factor (Tilahun, 2004). Pricing of livestock specifically cattle, have strong deterministic relationship with production in line with that of market need , Wider function of market system, existence of sufficient infrastructure in the market, and grazing land (Berhanu et al , 2007; Pavanello, 2010)

On the other hand, price of cattle is strongly attached with the existence of favorable climatic condition. Price responds strongly to the rainfall, reflecting the direct dependent of livestock health and productivity on climate (Barrett, 2003).

Although the trend is changing, most pastoralists in the country were producing livestock for the purpose of meeting immediate cash need, and other necessities (Ayalew et al,2013).Pastoral communities in Somali and Borena are gaining benefits from engaging in a market oriented production, and significant income are obtained from sale of cattle, camel and small ruminants.

Beside cash income need to cover unexpected costs, Pastoralists also look up to their livestock as a means of meeting cultural obligations (Javier and Dulce, 2006). The balance tilt in the perception of pastoralists towards only cultural value of livestock, as is the case in Hammer Woreda, could lead pastoralists to overlook the productivity of their livestock resources. For those that look into the economic benefits coming from livestock sales, conflict over grazing resources, drought, shortage of market opportunities, and distance to watering points influences the type of livestock and products they bring to market. There are multiple factors that affect the marketability of livestock, and these include weight, age, grade, and supply. This in turn will have effect on price increase or decrease. Knowledge on the type of producers and the consumers is a key to understanding the transaction participants, because this plays a crucial part in determining cattle price. According to the empirical finding of Teressa, producers are more likely to sell their animals at a price discount compared to traders. This could be associated with the relatively weaker bargaining ability of the producers resulting from the pressing need to sell quickly and meet immediate cash need; and also due to lack of cattle market information (Teressa, 2006).

To sum up, although efforts are being made to introduce and promote market oriented livestock production, these efforts are miniscule compared with the size of livestock population and a number of household who rear them (Berhanu et al, 2007). Therefore even though a number of studies has been conducted on the issue of factors that determine the cattle market price in different areas of the country, this study has attempted to identify the factors that determine the cattle market price that exists in south-western Ethiopia specifically Hammer Woreda, Dimeka market.

1.3Basic research questions

Based on the above general statement of the problem, the following specific research questions have been developed.

- ✓ What factors are considered in cattle market price determination?
- ✓ Who are the market participants in the cattle market?
- ✓ What market facilities are available in Dimeka market?

1.4 Objective of the research

The general objective of the study is to identify the determinants of cattle market price in Dimeka market. The research also has the following specific objectives:

- ✓ To identify factors that affect cattle market price what derives pastoralists to send their cattle to market.
- ✓ To identify market participants
- ✓ To examine the existing market facilities

1.5 Significance of the study

The main purpose of this research is to identify the determinants of cattle market price in south western Ethiopia, with a special emphasis on Hammer Woreda: Dimeka market.

This research is expected to have significance to the cattle market participants in a way that will enable them to sell their cattle in a more profitable manner from efficient pricing system through developed pricing elements, which are indicated on the research outcome. Therefore, significance of this research is signaling price information to the cattle market participants. Price information's are useful in designing appropriate cattle pricing through provision of services like reliable marketing information so as to avoid unfair cattle pricing practices (Teressa, 2006).

1.*6 Definition of terms*

- ➢ GDP: is a gross domestic product, whereby it is the measurement of a country growth rate. It is the production of goods and services produced within the country range, usually the calculation is done using two means i.e., expenditure approach and income approach.
- ➢ Pastorialism: it is an economic activity whereby the followers strongly reside on the keeping of livestock and its product. It is one type of agricultural production system. Usually peoples who are engaged in this economic activity are called pastoralist. They don't settle in one area rather move from one place to another in searching of land and water for the livestock's.
- ➢ Livestock: it he proportion of cattle's, sheep's, camels and so on.
- ➢ Woreda: it one of regional administration which contain a number of Kebeles within the bounder of a city.
- ➢ Unit of analysis: it is the level on which the research will be conducted. Usually it is used to

indicate the proportion of the sample to be taken. For instance, at a HH level of study, county level, regional level, market level and the like.

- Kercha: is an activity where a number of people share or contribute a certain amount of money to buy live animals and share per kilogram on equal basis.

1.7 Scope of the study

This research is conducted at Hammer Woreda: Dimeka market. Because of time and resource limitations this research only covers Hammer Woreda, and not the other Woredas found in the south western part of SNNPR. In addition to that, because of proximity to Jinka (capital city of zone administration), and the existence of governmental and non-governmental offices in it; as well as the similar nature of the market participants in Dimeka and Turmi markets; the Dimeka cattle market is the subject of this research. And also Dimeka town is the main livestock market location in Hammer Woreda.

1.8 Organization of the study report

The study is organized into five chapters. The first chapter includes the introduction part encompassing background, statement of the problem, research question, and objective, significance and scope of the study.

The second chapter in encompasses review of theoretical related literature. The third chapter i.e. the research design and methodology part discusses the research design, the sample size and sampling procedures, the data source and data collection methods as well as the data analysis methods. The analysis of the data comes in the fourth chapter.

The final chapter presents the findings based on data collected and analyzed, as well as the conclusion and recommendations are drawn.

CHAPTER TWO

2. Review of related literature

Livestock is an economic activity which serves as a source of wealth, a form of insurance against risk, status of symbol for pastoralist, and instrument for establishing social relation like that of marriage (Javier and Dulce,2006).

Livestock serves as a food, source of income, drift power, manure and fuel for cooking. Furthermore, these animals act as storage of wealth and determine the social status within the community (Benin et al, 2014). Livestock provides wide and year-round employment opportunities for surplus family labor. It also generates rapid increase in small holder's farmers' income (MEDaC, 1999)[1].

Livestock sector generates 15-17% of the Ethiopia's total GDP and 35-49% of agricultural GDP (Pavanello, 2010). The contribution of the sector is below expected compared to the size of the livestock population the country. This is more so in the pastoral areas of Ethiopia where a number of problems and challenges are faced by livestock keepers.

To improve the competitiveness of live animal marketing activities there should be intervention to address the factors that affect the productivity of livestock which in turn have an impact on the price of cattle (Hailemariam et al, 2008).

In this review, considerations will be given to cattle marketing aspects, in general, with detail look on the factors that determine cattle market price.

[1] Ministry of Economic Development and Cooperation

2.1 Some Basic Concepts

Market:

The concept market is linked to the degree of communication among buyers and sellers, and the degree of substitutability among goods. A market is thought of as a meeting of buyers and sellers: a place where sellers and buyers meet and exchange takes place, an area where price-determining forces (supply and demand) operate, an area where there is a demand for good (Andargachew, 1990). But a market is more than a physical place. It is a mechanism or an institution through which buyers and sellers exchange information and transact. No need to meet physically for a market to operate especially in today's information and communication technologies.

Marketing:

There is no universally accepted definition of marketing, the usefulness and validity of a definition is associated with its application. Specifically for this study the following definition was used. Kohl (1968) cited in Jone (1989), defined marketing in a way that is most applicable to agriculture. Accordingly: 'Marketing is the performance of all business activities involved in the flow of goods and services from the point of initial agricultural production until they are in the hands of ultimate consumers.'

Marketing is also an important aspect of any livestock system. It provides the mechanism whereby farmer's producers/pastoralists exchange their livestock products for cash. The cash is used for acquiring goods and services, which they do not produce themselves, in order to satisfy a variety of needs including food items, clothing, medication, schooling, the purchase of breeding stock and other production inputs and supplies (Solomon and Nigussie, 1983).

Marketing Systems:

A marketing system is a collection of channels, intermediaries, and business activities, which facilitate the physical distribution and economic exchange of goods (Kohls and Uhl, 1985). A channel of distribution may be defined as a path traced in the direct or indirect transfer of the title to a product as it moves from a producer to ultimate consumer or industrial users. Every channel of distribution contains one or more of "transfer points" at each of which there is always either an institution or a final buyer of the product. In the process of marketing, legal title to the product always changes hands at least once.

Marketing Efficiency:

Two aspects of market efficiency mostly mentioned in agricultural marketing literature are technical efficiency and pricing efficiency. Technical efficiency is attained when goods and services are provided at a minimum average cost that is, when the least cost combination of marketing activities are employed. Technical efficiency is achieved through technical improvement. Pricing efficiency is concerned with the price–making role of the market system. It concerns how accurately, how effectively, how rapidly, and how freely the marketing system makes price, which measure product values to the ultimate consumer and reflects these values through the various stages of the marketing system to the producer (Andargachew, 1990).

Performance is the crucial issue as discussed with reference to pricing and operational efficiency. Individual producers as well as the public have a stake in this matter because the degree of efficiency attained affects producer's prices and profit, costs to the consumer and thereby their real income and the general resource utilization (John and Saharan, 1988).

2.2 Approaches to the Study of Marketing Problems

There are three approaches to the study of agricultural marketing problems. These are the functional approach, the institutional approach, and the commodity approach that combines the first two.

Functional Approach: In this approach, each function is analyzed in relation to the importance of its performance in marketing different products and according to the nature of its performance by different marketing institutions (Cundiff and Still, 1964). By carefully investigating each of the functions performed in marketing and by examining the problems met in the performing function, it is possible to gain an understanding of marketing problems.

Institutional Approach: This approach concentrates on the description and analysis of the different organizations engaged in marketing (producers, wholesalers, agents, retailers, etc) and pays special attention to the operations and problems of each type of marketing institution (Cundiff and Still, 1964; Kohl and Uhl, 1985). The institutional analysis is based on the recognition of the foremost marketing channels and it considers the analysis of marketing costs and margins (Mendoza, 1991).

Commodity Approach: The marketing situation of each product chosen for study is examined from such stand points as sources and conditions of supply, producers' organizations and policies, the different middlemen who take part in the distribution of the product, and the characteristics and extent of the market for the product is analyzed (Cundiff and Still, 1964). The combination of functional and institutional approaches is applied to a selected product or commodity. This study adopts this approach and attempts to give detailed analysis of the specific problems encountered in marketing a particular product.

2.3. Methods of Evaluating Efficiency of Marketing System

Evaluation of the efficiency with which a marketing system operates forms the crux of the analysis of marketing problems (Andargachew, 1990). Economists have indicated two schools of thought on the relationship between marketing and development (Wolday, 1994) i.e. the determinist school and the activist school.

The determinist school believes that marketing responds to the environment and plays an essential passive role in development. The role and function of marketing depends on the size and density of the population, the size of the served area, the level of development of transport and communication, and the volume and variety of goods produced.

The activist school believes that marketing influences the environment and plays an active role in development. They considered marketing as a stimulus and multiplier of economic development since marketing involves economic integration, optimizing the uses of assets, increased competition, creating standards, developing entrepreneurs and managers, technological transfer, knowledge of international markets, learning opportunities and rewarding innovations, efficient distribution, and changing values and ideas.

The awareness that agricultural markets have a positive impact on the economic development was already an important step by policy makers. This recognition evokes the necessity of an analytical tool that evaluates the performance and efficiency of marketing systems. The construction of such a tool implies first existence of a method of analyzing the marketing system. Second, performance indicators need to be defined in order to measure the efficiency of a marketing system.

This study, therefore, attempted to examine the efficiency of cattle marketing in southern Ethiopia by employing the activist school of thought. Thus, the structure, conduct and

performance (SCP) approach was used as a theoretical framework to analyze the cattle marketing system.

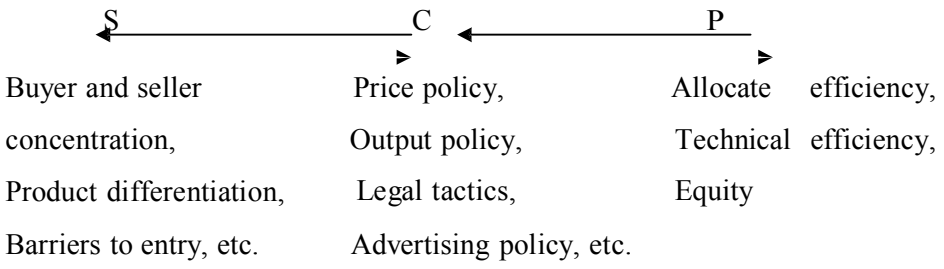
2.3.1. The Structure, Conduct and Performance (SCP) Model

Environmental and internal conditions of the firm have an influence on the actions and behavior of the firm. On the other hand, the composite of firm's actions is not equivalent to a complete description of overall market result. Only some important actions and their consequences on performance of the firm are relevant (Andargachew, 1990).

SCP model is one of the most common and pragmatic methods of analyzing a marketing system. It analyzes the relationship between functionally similar firms and their market behavior as a group and, it is mainly based on the nature of various sets of market attributes and relations between them and their performance (Scarborough and Kydd, 1992). This analytical method is based on the theory that market structure and market conduct determine the performance of a marketing system.

Efficiency factors can be evaluated by examining marketing enterprises for structure, conduct and performance (Abbott and Mekeham, 1979). The performance of a certain market or industry depends on the conduct of its sellers and buyers which, in turn, is strongly influenced by the structure of the relevant markets (Scarborough and Kydd, 1992; Abbott, 1987; Margrath, 1992).

Variables relevant in appraising firm's behavior can be put into three general categories: - structure, conduct, and performance related variables (Clodius and Mueller, 1961).



Source: Wolday (1994)

Figure 1: Relationship among Marketing Structure, Conduct, and Performance

All the three parameters do not have unidirectional movement but rather have an interdependent relationship as shown in the above figure. Hence, market structure does not only influence market performance but also has an impact on market conduct. Furthermore, Performance also affects the development of market structure and market conduct. The latter limits a similar effect on the structure of the marketing system.

Market Structure

Market structure includes - a) the degree of buyer and seller concentration, defined by the number of buyers and sellers in the market b) the degree of market transparency which refers to the availability of relevant market information, its distribution among buyers and sellers, and its adequacy in terms of price sharpening, quality comparisons and risk reduction or uncertainty about the future c) the condition of entry to the market referring to the relative ease or difficulty with which seller may enter the market. This is generally determined by the advantages that established sellers have over potential entrants (Clodius and Mueller, 1961). Thus, from market structure perspective, in an efficient market there should be sufficient number of firms in an industry given the size of the overall market and the firms of Appropriate sizes are needed to fully capture the economies of scale; there should no barriers to entry to the market; and firms should have full market information.

Market Conduct

"Acceptable conduct" includes the aspects that there are enough firms in the market to create some uncertainty in the minds of firms' managers regarding whether price changes both up and down; firm manager will be followed by competitors; there is no unjustified price discrimination; there is no collusion among different firms, and there are no pricing or other matters (Wolday, 1994).

2.3.2. Market Efficiency

Marketing Costs and Margins:

Results of analysis of marketing costs and margins are used to determine whether there are excess profits and serious inefficiencies or whether wide margins are due to technical constraints (such as transportation bottleneck).Like in any agricultural marketing, in cattle

marketing, there are several participants in the marketing chain; the participants include cattle traders, collectors, fattening enterprises, wholesale dealers and retailers. Both governmental and Private fattening enterprises are participating in collecting, wholesaling and fattening activities. The relative share of the different market participants will be estimated using the marketing margin analysis. The total marketing margin in the marketing system constitutes the marketing costs plus profit earned by the different participants in the system. Marketing costs include those incurred for feed, laborers working in the collection and feeding activity, costs of transportation to fattening area and to the market taxes, interest on capital and miscellaneous expenses like licensing and renewal fees considered.

2.3.1 Supply Hinter Land

Supply hinter land states the marketing route of cattle traded under different market conditions. Conventionally many livestock market in Ethiopia are categorized into primary market, secondary market and terminal market. And also the basis of such classifications is mainly the number of animals that reach to the market per market day and a number of market participants in the market (Hailemariam et al, 2008). In terms of a number of animals, primary, secondary and terminal markets are those in which less than 500 heads, 500-1000 heads, and greater than 1000 heads of animals, respectively reach the market day.

Primary markets are those in which the main sellers are producers or pastoralists i.e., the case of Dimeka market and the main buyers are local assemblers.

Secondary markets are those in which the main sellers are local assemblers and the main buyers are big traders. In terminal markets the main sellers are big traders and main buyers are butchers and restaurants. Even though there is a tradition livestock source in the country, potential sources of livestock production areas do have a tremendous impact on integrating buyers and sellers in the market and enables to understand who are involved in the market.

2.4. Price Analysis

Prices are usually fixed by individual bargaining and depend mainly on supply and demand, which is heavily influenced by the season of the year and the occurrence of religious and cultural festivals, animal Attributes such as sex, age of animal, buyers type and of sale(Ayalew et

al,2013) .

In order to extend our further understanding let have look on factor that influence price variation.

2.4.1Factors influencing Intra-Annual Price Variation

Kohl and Uhl (1985) put factors influencing farm prices into four groups. The first one is supply condition that includes production decision, weather, disease, harvested acreage, etc. The second one is demand condition that includes income, prices, tastes and preferences, population, etc. The marketing system includes value added, price and cost behavior, and procurement strategies. Finally, government may influence price through price support, supply control, trade policies or policies influencing domestic demand.

According to William and Robinson (1990), under a given demand and supply condition, the specific lot of an agricultural product differ in terms of its attributes and prices often vary depending on different qualities, classes and varieties. Price differences based on quality are sometimes referred to as premiums or discounts. These price differences may change through time but such variations are usually small relative to changes in the average level of prices for the commodity.

Earlier market studies in the Ethiopia show that supply, sales and prices of small and large ruminants in the central and southeast highlands reach at their peaks at festivals times (Andargachew, 1990).

The price of particular species/breeds depends on animal attributes/characteristics such as weight, age, time of sale, condition, buyer purpose, and festival periods (Tekalign, 1988; Andargachew and Brokken, 1993; Jabbar, 1995; Rodrigezel et al., 1995; Getachew, 2002).

2.4.1.1 Characteristics of marketed Animals

The characteristics of animals which are traded in the cattle market can be categorized by sex (male, female), age (less than 1 year, less than 2 years…), color, and body conditions like fat, medium and thin (Solomon, 2004).The assessment and identification of body condition score was made by observing the condition of certain physical features of cattle like backbone, hipbone, ribs, tail, head, and the general body outline of cattle's (Ibid).

Detail descriptions are presented below:

Table 2: Grading of Cattle using its Body size and condition

No	Grade	Cattle body condition used for grading				
		Backbone	Hook bone of the pelvis	Ribs	Pin bone	Outline body size
1.	Very Fat	Not visible	Not visible	Not visible	Slightly recessed	Rounded
2.	Fat	Not visible	Slightly visible	May not visible	Uniform toothier body	Uniform
3.	Medium	Slightly visible	Visible	Slightly visible	Slightly bumpy	Undulating
4.	thin	Visible	Very visible	Highly Visible	Bumpy	Irregular

Source: livestock and meat Marketing Corporation (1994)

Whenever weight of the animal is peroxide by visual observation of the body conditions, (Like very fat, fat, medium and thin), the purchase price of animals will reflect not only the bargaining skill of both buyers and sellers, but also the buyer's preference for characteristics of animals and the sellers willingness to sell, which sometimes leads to transaction failure (Williams, 2006).

The eye bole estimation for animal live weight traded will result on high level of uncertainty among buyers and sellers. The resultant effect of such uncertain transaction ultimately negatively affects the producers (Hailemariam et al, 2008).

The seasonal pattern in the availability livestock significantly affects the local cattle market price. Farmers usually go to market without price information, even though the price of animals fluctuates depending on the number of animals available in the market, seasonal conditions, and traders available in the market and also their capability to buy (Fufa, 2012).

Wet season corresponds to rainy season with relative enough supply of feed to livestock; dry season on the contrary is the situation where there is a shortage of feed and water, and is the time where producers are forced to take their livestock to the market.

The livestock market in most parts of the country characterized by seasonality inflow and prices of animals (Hailemariam et al, 2008). For example livestock transaction in Borena zone indicated that livestock supply in market does not have uniform pattern where supply highly

fluctuates from time to time. Overall, during the peak period sells of animal were twice as high as in the off peak periods. In pastoral low land area, a number of factors contribute to this phenomenon, such as; seasonality of consumption demand (fasting and other ceremonial period) in domestic and export market, drought, disease outbreak, lack of information, availability of food aid, clan conflict and others (Ibid).

Clear pattern is observed in price decrease as one move away from the wet season. In the wet season cattle price are significantly higher than during the dry season. This price difference might be expected due to shortage of feed and water in the dry season, which forces producers to sell their livestock, thus it increase the supply of livestock in the market during the dry season (Teklewold, 2009).

On the other hand during the rainy season, agro-pastoralist are usually engaged in other farming activities, and do not get time to engage in livestock marketing, and this can results in decline on the availability of livestock markets. Availability of good pasture is also another factor to the low supply of animal during the rainy season. Constraints like feed and water shortage could significantly affect the supply and sells of animals. Pastoralist prefer to keep as many animal as possible during rainy season hoping that they will have animal of better condition at the end of the rainy season. Pastoralist will also get sufficient amount of milk to feed them during rainy season, and thus there is less interest in sell of animals (Gezahgne et al, 2006).

In cattle marketing system, there are a number of participants involved in cattle trading, the number as well as diversity of these actors depends on the market type i.e. primary, secondary or terminal market. The market actors/participants could be producers, collectors, feedlot owners, big traders, small traders, and cooperatives.

1. Producers:

These are individuals who reside on the rural areas with limited access of market. They consist of pastoralists and semi pastoralists and farmers producing sheep and goat, cattle, and camels. Usually access of information for producers are very difficult or very scarce, a number of researchers confirms this view. Producers usually depend on previous week's market information or if available the information which they get from the nearby livestock markets (Hailemariam et al, 2008).

Therefore, that is why group marketing, decentralization of cattle Information centers and the involvement of small scale farmers in dissemination of information Plays a vital role in improving farmer's access of formal markets (Mussemwa, 2008).

2. Collectors:

These are market agents collecting animal from their locality and remote markets for supply usually big or small scale traders and sometimes to livestock trading cooperatives (Hailemariam et al, 2008). This market participant takes the properties of pastoral traders who engage in buying cattle for restocking purpose, in the case of Dimeka market. Collectors reach remote pastoral area and collect animals from pastoralist who temporarily resides around central watering points whereby they can get large number of traders.

In the case of collectors the existence of trust facilities; meaning business conducted on the anticipation and stipulated mutual agreement to deliver; the agreed animal body conditions, time of delivery on the market are highly concerned. Further on, more efficient and effective relationship can affect the result obtained from livestock supply chain responsiveness (Hadfield and Betchel, 2002).

The locations where collectors usually meet pastoralists in remote area indicates lack of access to market by producers and indicate the need to open new primary market. Sometimes there could be the possibility to distorting information about the situation of the market (Hailemariam et al, 2008).

3. Feedlot operators

These operators hold cattle for fattening purpose and resale the cattle's on different market. They use cattle of different age group and breed types based on the demand and the type of their customers.

4. Big traders:

These are those market participants permanently operating in the live animal and meat value chain usually known by purchasing large number of animal from different sources and supply to their customer (Hailemariam et al, 2008).

These are agents that are limited in number and sharing the market among themselves in order to gain price competition (Getnet, 2011). Big traders operate under huge capital and serving as

Agents of abettors to buy live animal; they do have the capacity to absorb the cattle loss from mortality. They sometimes collect cattle from traders.

5. Medium/ Small traders

Though the number of participants as cattle trades is large, they purchase in small amount than big traders (Getnet, 2011). They collect animal on weekly bases due to limitation of capital. They substitute the character of butchers who buy animal for butchering purpose and sometimes take character of ordinary cattle traders who involve cattle trading for the purpose of *Kiretcha*[2] during festival times.

6. Cooperatives

These are voluntary organized in pastoral and semi pastoral areas and the members are those who are residents in a specific market area (Hailemariam et al, 2008).They work using accumulated capital generated from the members. Cooperatives do have strong bargaining power to press price during the time of price negotiation, as a result they do have a strong impact on stabilizing cattle price in the market. There econometric result was consistent with lower price offered by cooperatives, small and big traders in the cattle market (Teklewold; et al. 2009). Though their name indicates that they are pastoralists and that government support is rendered with this assumption, most of the multi-purpose livestock trading cooperatives are organizations of petty traders of livestock. These groups of people are dwellers of small urban centers around pastoral areas and are organized in cooperatives to get more bargaining power to negotiate prices both with pastoralists and their buyers (Ibid).

2.4.1.2 The impact of market facilities on cattle market price

- Market information

This is a system needed to disseminate up to date market information to keep all livestock market participants at the same level of access for market information such as price, time, specific demands, quality information and the like. This enables all market participants to make a well informed decision in marking transactions. In livestock marketing system, however, Information is held as a private property and not equally shared among the different participants

[2]Kiretcha is away where a number of peoples share money to buy live animals and share it per kilogram on equal basis.

In the value chain and usually lacks trickledown effect. In this case, those that have the power to dictate the terms particularly those in the higher end of the chain act only in their own interests. This forces farmers who do not have countervailing economic power to also act in their own interests. The quality and quantity requirement demanded by the end user does not properly go down to the lower ends of the chain (Hadfield and Betchel, 2002).

Conversely, information about livestock production and associated cultural practices is not clearly understood at the higher ends of the chain. There is no significant investment in the relationship; rather the relationship in the market is based on mistrust. In this type of relationship, for the most part, producers are considered as input suppliers rather than strategic partners in the value chains. The goal of the production system is only to satisfy producer's own deficit, without giving much emphasis to meet the market demand and ensure sustainable supply of livestock to the market. These results in unpredictable quantity and quality of products destined for different internal and export markets and less remunerative prices for producers (Benin and Jabbar, 2004). It also limits the development of value addition by various participants such as producers, traders and processors.

Market actors in the lower end of the chain are usually far from accessing updated market information. A practical example in this regard is a disinformation about the export ban as a result of Rift Valley fever reported in Kenya (Hailemariam et al, 2008). Farmers in Bale lowlands were misinformed that all export abattoirs are closed due to unknown reasons while that of Borena pastoralists were told that the sheep and goat market is banned by the Arab countries due to the war the Union of Islamic Courts in Somalia declared on Ethiopia. The disaster created by brokers in Borena and Bale markets is the result of poor market information system that does not let producers to get access to information about what is happening in the terminal markets (Teklewold; etal. 2009).

- Road network

Road is one of a very important infrastructure in the livestock marketing system. The type of road connecting an area determines the type of buyers that can get access to its market. It also affects the profitability of most of the participants in the livestock market. The Borena area is connected to the centre/terminal markets with asphalt road passing from Addis Ababa via Awassa and Yabello to Moyale. The most important livestock markets like Dubuluq, Mega, and

Harobeke are located on this asphalt road. There are also a number of primary and secondary markets located in 25 km radius from this road. This enables exporters to easily transport animals to their quarantines or abattoirs at relatively lower cost of transportation and very minimum level of weight loss and mortality rates relative to inaccessible areas. Still there are potential areas considered as sources of sheep and goat but remained unexploited due to lack of road network.

Bale lowlands, however, are connected to the centre of the country by poor road, which makes it difficult to transport livestock for the export market. Truck owners charge exorbitant price to load animals from such areas. The trucks supplied by the export abattoirs are not enough to transport animals from these areas. The poor road, and the associated high maintenance cost, time and fuel consumption of the vehicles compel the abattoirs to offer priority to other supply markets like Borena, Afar, Somali and Wello. As a result, sheep and goats collected from Bale lowlands at Ginir and Goro have to wait longer time in traders' hands, though there is a chance of weight gain or lose depending on the weather condition. Those sheep and goat collected from extreme lowlands die when they are kept at higher altitudes, and always put the traders at financial risk. The tarmac road construction recently started in Bale area will open better opportunities for both livestock exporters and the pastoralists in the near future. The proximity of the area to the center relative to other pastoralist areas makes it cheaper and faster to reach and exploit the resources in Bale lowlands, once the asphalt road is constructed.

- Market centers

Market centers and their associated infrastructures are important factors that have to be considered in the move to increase the supply of livestock for both domestic and export markets. Due to the wider geographical location of pastoralists, some important sources of livestock are very far from market centers. Pastoralists from the border areas need to travel for a week or more to reach these market areas. This influences the marketing behavior of pastoralists that they either have to keep their animals unsold or they have to go to nearby informal markets in the neighboring countries. In order to attract such resources to the central markets, there is a need to thoroughly assess these remote areas and open up primary markets with at least dry weather roads connecting them to secondary markets.

Pastoralists located far from market centers also have problems of basic supplies like sugar, cloths, other foodstuffs and industrial products. Making such items available in remote pastoral areas, by opening new markets in remote areas, would increase their demand for cash. This further encourages them to sell more animals, and hence increase supply of livestock to the export market.

- Holding grounds

The Ethiopian pastoralist farming system stretches from mid altitude areas (2200 m above sea level) to extremely lowland areas (600 m above sea level) with mean annual temperature of 19 to 35°C, respectively. Not all animals taken from these areas adapt to the weather conditions in the Ethiopian Central Rift Valley where the abattoirs are located. Sheep and goats collected from extreme lowlands like the Ethio-Kenyan border and the lowlands of Somali and Afar regional state mostly fail to adapt to mid altitude areas unless they are slaughtered upon arrival to the abattoirs. But in cases when traders have to hold them for a certain time, the mortality rate is very high due to weather change. This indicates the importance of having holding grounds in lowland areas like Moyale to keep reserve stock for peak demand periods. Supply shortages and other circumstances (such as clan conflict) that drive shortages may coincide with very high demand period from the importing countries. Thus, holding reserve stock in low and mid altitude areas could help buffers such conditions (Fufa, 2012).

2.4.1.3 Non-infrastructural factors affecting cattle market price

Other than the above mentioned infrastructural factors that affect cattle market price, there are other factors that affect cattle market price.

- Clan conflict

The Ethiopian pastoralist community is composed of several clans and ethnic groups. These groups compete for limited land and water resources. Conflicts arise as a result of competition for scarce resources. The problems in such pastoralists areas are directly manifested in the livestock markets. Whenever there is a clan conflict in the area, the market is disrupted and the number of animals brought to the markets decreases. Buyers on the other side feel insecure and consider the market as unreliable supply source (Hailemariam et al, 2008).

For instance, disruption in rainfall and shrinkage of grazing land have also rendered preexisting allies vulnerable to different intra and inter ethic conflict through arm proliferation to win the competition of pastor land (Samuel et al , 2014). This affects the livestock kept at a distant far from the market area in search of grazing land, as a result number of livestock traded in the market decreases.

- Purchasing practices of abattoirs

The purchasing system by the abattoirs should be organized in such a way that it can attract as many livestock sellers as possible. Despite the reported supply shortage by abattoirs, representative of some abattoirs at source markets were found to be discriminating against some of the sellers. This implies that the system is sometimes selective in its operation and creates unequal chance for potential sellers in the market. In Negelle Borena, the LUNA representative was reported not buying from livestock trading cooperatives. But cooperatives in these areas are stronger relative to other supply areas and can collect and supply considerable number of animals as long as they can get a dependable buyer (Hailemariam et al, 2008).

Abattoirs' purchasing system in most livestock markets is also characterized by frequent fluctuation in prices and the abrupt change in the live weight range they require, after they forwarded order to their suppliers.

- Lack of standardized unit of transaction in cattle, sheep and goats markets

There are two ways of assessing the weight of cattle, sheep and goats purchased in the market: using the weighing scale as in the case of Borena and Bale markets and visual assessment of body condition as in the case of Metehara, Miesso, Babile, and Wello markets. However, abattoirs and their representatives hand over sheep and goats using weighing scales in all markets. This means, there is non-uniform system of transaction in cattle, sheep and goats supply chain. In a system where animals are collected from the market using visual estimation and sold to the abattoirs by weight scale, traders who collect the animal and supply to the exporters are not certain about their profit margin. They have to negotiate and cut down price in the source market in order to ensure their profit. Collectors operating in such uncertain system always try to keep their risk to the minimum level by operating at smaller scale which is eventually manifested as a supply shortage in the destination market. Producers would be the final losers since every trader wants to aver risk. Such system does not encourage pastoralists

to supply more animals to the Export targeted markets. Those who buy using eye ball estimation are small traders, and these hand over to the abattoir agents based on weighing scale. Thus, it would be imperative to establish uniform systems of transaction in the livestock markets (Solomon, 2004).

Different mechanisms could be used to standardize units of transaction in the sheep and goat market. One of the options is to organize buyers in group so that everybody will get training about the benefits of having a standard unit of measurement. This could be best implemented during the seasons where there is good market price after a certain level of awareness creation is made in the market. Experience sharing tours could also be organized for traders and pastoralists to Borena lowlands where sheep and goats' transaction is made using a weighing scale at all market levels.

- Lack of consultation forum among market participants

Market is an institution involving different actors at several levels with different roles. Every market agent has its important role that justifies its presence in the system. Coordinated and smooth functioning of the market enhances the volume of trade and the benefit that different participants and the economy can drive from the market. In a market where there is high level of mistrust among the participants, i.e. where everybody wants to make exorbitant profit at the expense of other. Producers will never be encouraged to produce more since they will be the ones worst affected. Unstable and non-ethical market environment will deter an effort to increase supply of exportable animals from the source areas. Thus, in livestock market where different actors including pastoralists interact, there is a need to create forums of consultation and establishing a team work to bring together producers, traders, abattoirs, and the public sector, so that everybody in the domain would have a clear understanding and contribute to the smooth functioning of the supply chains (Handfield and Betchel,2002).

- Weakness in understanding the existing social structure

Pastoralist communities are composed of clam based social organization. Most of the activities of these communities are linked to their clan structure. For example, the Somali pastoralists that are available all along the eastern lowland areas of the country have a clearly visible clan based marketing behavior. They take their livestock to the market collectively in group and hand over the animals to a broker that belongs to their clan. This broker is the one who has better market information relative to individual producers and is also a price marker. No other broker, outside

the clan, can mediate the transaction in the livestock market. Brokers in this case act as representatives of their clan in the market. Understanding this sort of social structures and their marketing behavior is imperative in the effort made to boost exportable livestock supply to the market (Samuel et al, 2014).

- Lack of livestock market extension service

In most areas where major livestock markets are available, the agricultural extension system is not well informed about the export market. In fact the extension system is not as such active to provide appropriate support to producers about production of livestock for export markets. Pastoralists and rural development agents in Bale, South Wello, and Kemesse were found to have weak communication with the livestock market supplying to the export market. Although they informally know that animals collected from their area are exported to the Middle East, they have little information on who bought the animals, what quality parameters the buyers consider, what time is most preferred by buyers, as well as the purchasing system. Despite these, the markets have to a greater extent brought marketing behavior changes within the producers. Better market price has attracted producers and motivated them to provide animals of required quality. But still sustainable supply of livestock cannot be expected without appropriate livestock development extension intervention. Market focused livestock extension service is needed in order to assist production of better quality livestock required in the market. The extension system can also help in further improving the marketing behavior of farmers.

- Limited research and development effort

There is limited action research output to increase productivity of livestock in major production areas. Increasing productivity would imply increasing cattle, sheep and goats meat production, which could be made possible from increasing the number of cattle, sheep and goats in areas where these animals are appropriate species. Increasing productivity depends on: increasing reproductive efficiency through selection and crossbreeding; improving the genetic potential for growth; and improving nutrition and management practices to improve reproductive rate, young stock survival, and rate and composition of growth. Research is also not addressing the problems related to product quality. For instance, there is lack of scientific evidence about the problem of meat discoloration in Ethiopia, a problem widely associated with highland sheep and goats (Hailemariam et a1, 2008).

Surprisingly, whether the problem of highland meat Discoloration is due to breed, environment, management or post slaughtering technical consideration is not yet clearly known by the exporters. Therefore there is a dire need to address some of the researchable issues that have significant effect at producers and/or exporter level.

CHAPTER THREE

Research Methodology

3.1 Study Area

- Description of the study area

The SNNPR encompasses 120 Woreda's and it contains 12-14 million people, which comprises one fifth of the country's population. Out of this total population, the majority is assumed to be found in the south western and southern part of Ethiopia. The south western part of the Ethiopia is the semi-arid zone of Omo river basin with a low and erratic rainfall. The area is crossed by the Woito River originate at the border of Kuttum Mountain east and west. The wealth of the population judged by cattle ownership where 25% of the better household (HH) have 70 cattle's and 200 small stock namely goats and sheep's, 45% of the HH of the middle class holds up to 20 cattle's and 80 small stock, whereas the small and the poor HH contains 30% of the total HH not more than 20 cattle's and small stocks.[3]

Even though the economy is dominated by livestock, they cultivate sorghum and maize on the sandy soil of plain on river valley bottom. The cultivation is dependent on the modest rainfall of the main season, during March and June. The main income sources of the producers are livestock products and honey. Among the Five[4] south western livelihood zones, Hammer Woreda hosts the largest pastoral community and thus was the focus of this study.

- Hammer Woreda

Hammer occupies a mountainous region in the eastern part of the lower Omo valley. It is located at 850 kilometer southwest to Addis Ababa and 340 kilometer south of Arba Minch. The Woreda is located at an altitude level of 1500 meter. The temperature of the Woreda ranges 26°c at a normal coolest season from April-June and 40°c in hottest months from January up to mid-March. Regarding the rainfall of the Woreda, the largest rainy season stretches from April to May.

[3] For population figure and the wealth classification, details are included in the Report of USAID, Ethiopia SNNPR overview of livelihood profile

[4] The five woreda's found in the south western part of SNNPR: Dassnech, Nagatome, Bentsmay, Salamago and Hammer

A complex mix of bushes vegetation, shrubs and scattered dwarf acacia trees with a mixed annual and perennial grass land that are the common to the low land south Omo, are the vegetation that are found in the Woreda.

The total populations composed of Pastoral (PA) and Agro-Pastoral (APA) and it is estimated to be 28,989 APA and 7,936 of PA[5].

The ethnic group in the Woreda is composed of three groups namely Hammer, Erbore and Kara and the proportion of the population with respect of ethnic group is 81.4%, 15.4% and 3.2% of the total population of the Woreda respectively.

As far as the socio economic structure is concerned, there about 324,000 sheep, 714,000 goats and 332,000 cattle (CSA, 2010/11). Like any other pastoral community in South nations and nationalities peoples region (SNNPR), the Hammer Woreda pastoral community basis on livestock rearing and small scale crop[6] cultivations. Most of the HH have relatively large level of communal grazing land and livestock is the important economic activity serving as a major source of cash, food as well as assets for the community.

The main food source of the household (HH) is maize and milk from own source, whereas the poor and very poor families depend on purchase and food aid. Food aid is very common during a drought period.

Hammer Woreda is selected for the study due to its large pastoral population and the potential for availability of secondary data.

[5]This data was generated from the south Omo pastoral livelihood zone profile DPPC (2005)

[6] Crops grow in the area such as maze, sorghum, and the like

Figure 2: Map of South Omo (Source: Google map)

- Dimeka Market

From the 17 Pastoral (PA)and Agro-pastoral (APA) areas found in Hammer Woreda, and Turmi, Erbore, Alduba markets, Dimeka market is selected for the purpose of the study.

Dimeka was selected because of its diverse cattle market participant coming from different kebels as compared to other markets in the Woreda. Also its proximity to the capital city of south Omo zone (Jinka); and its location on the main trade route to Arba Minch, was considered in selecting it. The market route of the Woreda lies between Dimeka and Turmi city. The Dimeka market system operates on Saturday and Tuesday.

3.2 Research Design

3.2.1 Methods of Data Collection

Data from secondary sources were obtained for appropriate sources identified for the purpose.

Data from primary sources were collected in the market from traders', in order to identify; what factors are considered to purchase animal, what facilities are exists in the market and category of participation. Therefore, Semi-structured questionnaires targeted at traders' in the market were administered. Key Informant (KI) interview of pastoralists/producers that were engaged in the transaction of cattle during the market days, were also conducted to generate information on cattle price determinant factors in general and, especially facilities provided in the market, forces drive them to visit the markets and other.

3.2.2Data Requirements

The study has used a wide Varity of information on different variables purpose of selling and buying, price of cattle, type of trader, and type of cattle sold and bought age and general body condition of the cattle, sold live weight of animal, and time of sale.

Moreover, data on market participants, and marketing facilities were collected. Data on trader, as well as producers on access to credit, transportation and marketing information, buying and selling behavior, and barriers to entry and exit were all collected using a structured questionnaire and from interviews.

3.2.3Sampling Design

In the design of this research, the researcher aimed at finding accurate and complete information about the determinants of cattle market price in Dimeka market, Hammer Woreda. Efforts were also made, in order to describe the nature of the market, pricing system, availability of facilities, and identify variables that affect the cattle market price.

Unlike most of past studies whose unit of analysis was at House hold (HH) level (Ouma, 2007), the researcher aims at studying unit of analysis at a market level. The data were collected by making eight market day visits during the period of two months i.e., mid of August to mid of October.

Participants/traders were selected using purposive random sampling. The selection of traders to be included in the sample like any sampling problem is a function of the coverage desired and the available resource for collecting the information.

Producers Survey as Key Informant for this study was selected purposively because they were the main cattle supplier in the study area. In addition to this, Woreda Rural development officers are surveyed in the form of interview purposely.

3.3 Approach to the study

- Cattle market price determinants

Among the number of factors assumed to be considered by traders in determining cattle market price, age of the cattle, size/weight, time of sell/buy, and purpose of the seller/buyer, were considered in this study. Age of cattle was determined by the type and number of teeth erupted (Solomon, 2004).Cattle get matured when they have eight incisor teeth on the lower jaw and upper jaw. A dental pad occupies the place of the incisors. The appearance and wear of the permanent or second incisor would denote the age of the cattle. The following approximation was used:

At birth, a calf has two or more of the temporary incisor, and in a months' time all of the Temporary incisors have made their appearances.

In the age of 15 to 18 months, a pair of permanent teeth will replace the center pair of temporary incisors and these are up in wear at 2 years.

In 2 1/2 to 3 years, the intermediate or second pair of permanent incisors appears and will fully developed

In the age of 3 ½, the second intermediate or later will appear and get mature in 4 years.

In the age of 4 ½ to 5 years, the corner incisors are replacing, and a full set of permanent incisors in wear is typical at 5 years.

Beyond 5 years of age, the incisors show a sign of wear and the shape of the wearing surface is changed, being triangular as the teeth gets worn down and is distinctly separated.

In addition, there is less arch or curvature of the teeth forward as age advances.

The other factor that is assumed to be used to determine cattle market price is the body condition the cattle (Solomon, 2004). The body condition animals was determined by using suggesting; Good fair and bad condition

For the determination of buyer's purpose, five most frequently used purpose of the buyer were identified and considered (Teressa, 2006). These are-resale, slaughter, fattening, breeding and consumption.

➢ Cattle market participants

Different cattle market participants could be identified in the exchange function between pastoralist and final consumers. These may include pastoralists, pastoral traders, hotel owners, brokers and consumers. For the purpose of this research, questionnaires were designed that focused on five cattle market participants.

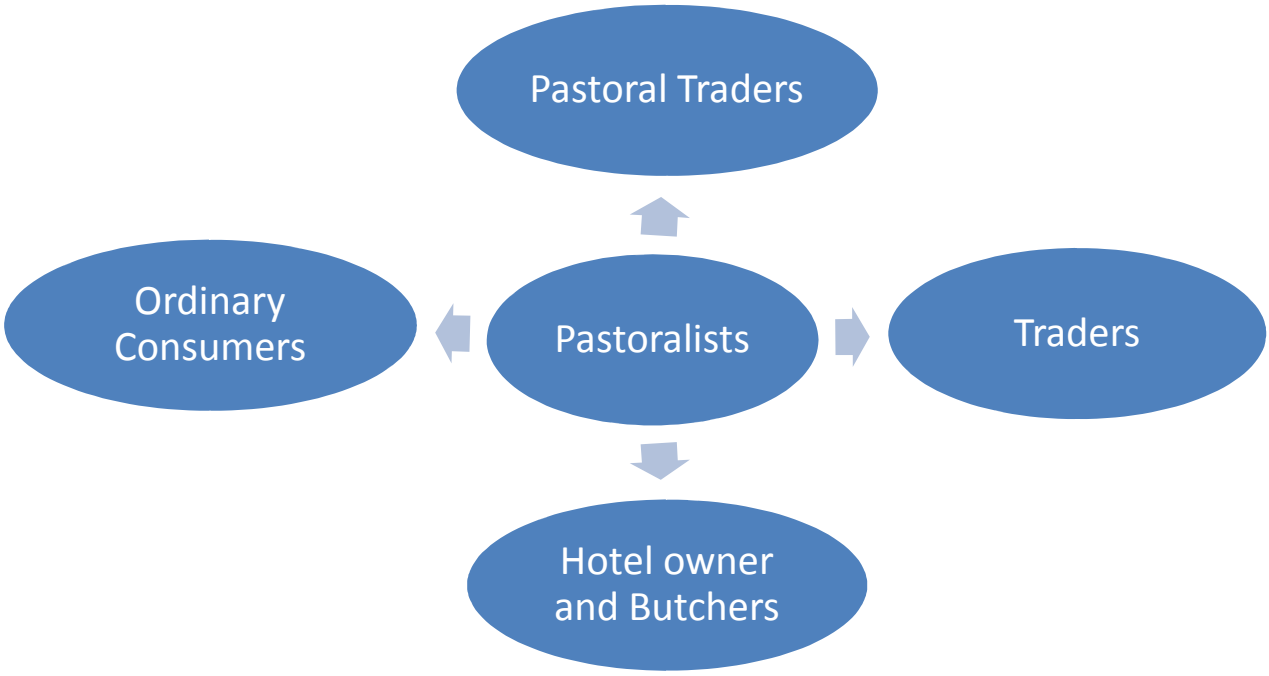


Fig.1: Cattle market participants (Researchers own sight view)

Pastoralists: are the major cattle market actors who engage themselves in livestock rearing activity and they supply small number of cattle to primary, secondary and some time to larger terminal market in order to cover cash need, house hold food gap, clothing, medical fees and other reasons. Pastoralists sometimes sell their livestock due to shortage of food gap during dry period (Berhanu et al, 2007).

Pastoral traders: these are normally live in rural areas and their main occupation is farming/livestock rising. They enter in cattle trading activity at the time when they remain idle during the peak transaction periods of the year. They buy cattle at the farm gate and village levels and bring these for re-sales to primary, secondary and terminal markets. They also buy

Additional new animal early on in the day at the markets, and sale same animals in the day and make profit (Solomon, 2004).

Traders: These participants engage in the market transaction for the purpose of making profit in order to gain more returns in relation to what the producers get. Traders are also engaged in other business activities and reside in urban centers. These types of traders participate in cattle trading business at the time of high margin, i.e., at the time of festivals and holidays. Other times of the year they return to their regular business activities. These traders mostly operate at primary and secondary markets.

Hotel owners/ butcher: these participants are found in rural as well as in urban areas. However, they are prominent in big urban cities.

Ordinary consumers: these market participants engage in the transaction process in time of special events like that of festivals, holidays in the form of *Kiretcha*, weddings, and cultural celebrations.

- Market facilities

Market facilities play a vital role in the pre and post transaction processes, as well as affect the determination of cattle price in the market. Among the market facilities include availability of market information, infrastructure, credit, quarantines, and veterinary services. For the purpose of these research, based on a check list of the critical facilities and services provisions at primary market, Key Informant were, interviewed to evaluate the facilities at Dimeka Market.

Regarding the price determinants, the data collected from the study area were subjected to quantitative analysis based on log linear regression model in order to identify the factors/characteristics that influence the variation of cattle price; and to evaluate their relative importance by decomposing into two major parts i.e., characteristics of animals offered and characteristics of the non-animal variables. Descriptive statistics were also applied in order to estimate mean, mode, median and percentages to able to identify the main factors that influence the cattle market price.

3.4 Methods of data analysis

3.4.1 Descriptive analysis

Descriptive analysis was carried out to examine and describe the variables that determine the cattle market price at Dimeka market using mean, mode, median, frequency and standard deviation of the variables to see their magnitude and to give further explanation on what the results indicate.

Responses from 60respondents in 8 market days over a period of two months were subjected to analysis. Variables that were considered include age, weight/size, time of sell/buying, conditions, type of buyers, and purpose of sell/buy.

3.4.2Econometric analysis

Multiple regression model or log linear regression analytical method was applied to see the deterministic relationship of variables on the price of cattle in the market. There reason of using log transformed dependent variable was because of the existence of outliers in the response of respondents as well as some independent variables were under dummy variable cases. So in order to make our interpretation plausible Log transformed linear regression model was used. This is consistent with that of pervious researchers (Teressa, 2006) studied on the same topic. The regression specified to explain price has the following model.

$$Ln(P_i)= \alpha+\sum\beta_i X_i+\delta\sum X_i X_j+e_i$$

Where:

- $Ln(P_i)$ is the natural log transformation of nominal price per kilogram live weight of i^{th} animal. The dependent variable P_i is a continuous one representing observed price per kilogram live weight of the cattle (Adargachew and Borrken ,1993)
- α is a constant term indicating the average price of cattle for respective base variables;
- β and δ are the parameters to be estimated;
- X_i and X_j is the matrix of explanatory variables that includes age, sex, live weight, purpose of buyers and time of sell/buy (Takalign, 1988). Finally, e_i is a disturbance term with a mean zero and constant variance.

Independent variables and there expected signs:

Variables	Signs
Sex	±
Age	±
Weight	+
Time of sell/buy	±
Purpose of sell	±
Market participants	±
Market facilities	+
Conditions of sell/buy	+

In this model, asset of quantitative (continuous) and qualitative (discrete) variables in the form of dummies were used to identify factors affecting price variation. In using dummy variable, the implicit assumption is that the regression line for the different groups differs only in the intercept term but has the same slope coefficients (Gujarati, 2007).

If there is a constant term in the regression equation, the number of dummies defined should always be one less than the "N" umber of grouping by that category because the constant term is the intercept for the base group, i.e. the average value of the dummies in the base. If we include both the constant term and all groups, on the dummy, we will be introducing perfect Multicollinearity and it is referred to as the "the dummy-variable trap". The coefficients of the dummy variables measures differences in intercept, which were the premiums or discounts, associated with each dummy relative to its base. If we do not introduce a constant term in the regression equation, we can define a dummy for each group and in this case, the coefficient of the dummy variables measures the intercepts for the respective groups.

The analysis was done with the help of the Statistical Package for Social Sciences(SPSS) computers software program .F-test was used to test the overall effect of the dummy group ;the null hypothesis is that all of the regression coefficients are equal to zero .If the null hypothesis is true, then the $R^2$is not significantly different from zero. After the overall significance of the Model was checked, the t-test was used to see the individual coefficients of the dummy variables

i.e. premium or discounts relative to the base, which were statistically different from zero.

Lack of significance in the coefficients of individual dummy variables of the group means that there was no difference between the dummy with which the premium or discount was associated and the dummy in the base. Multicollinearity tells about the significance of the regression coefficients. If the coefficients are not significant but R^2 is then, Multicollinearity maybe a problem.

In addition, the Variance Inflation Factor VIF of the explanatory variables was checked .Large VIF values are indicators of Multicollinearity and those explanatory variables that have VIF values (>10%)were excluded from the regression analysis(Maddala, 1998).

$$VIF=1/1-R^2$$

Where $R^2$is, the squared multiple correlation coefficient between x_i and the other explanatory variables. VIF ($B_{i\delta i}$) is the ratio of the actual variance of $B_{i\delta i}$ to what the variance of $B_{i\delta i}$ would have been if x_i were to be uncorrelated with the remaining x's.

The proceeding section have emphasized the methodology applied, detail explanation about the sampling techniques, method of data collection and specification of the model with estimation of technical coefficients. Result and discussion on descriptive and econometric analysis are the subject matter of chapter four.

CHAPTER FOUR

Results and Discussion

4.1 Descriptive Analysis

- **Socio-economic characteristics of the respondents**

A total of 60 respondents from eight market days were interviewed to gain understanding on the characteristics of respondents.

The average age of respondents was 40. Experience in cattle trading is variable amongst the respondents, with half of them reporting 1-5 years, and the remaining 33% and 17% of the respondents were reported engaged for 15-20 years, and for greater than 20 years, respectively.

The main occupation of the respondent is trading (67%) and those identified themselves as pastoral traders are 33%.

Characteristics Examined	Mean Response
Age of traders	40 years
Main occupation	
Pastoral trader	37%
Traders	62%
Experience of trading	
1-5years	50%
15-20 years	33%
>20 years	17

Table 4.1 Table 4.1 illustrates the respondents' characteristics which includes age and main occupation experience of trading cattle in year terms.

Regarding frequency of participation, purchase and variation of supply, type of Cattle traded ,time of transaction & mode of transportation indicated on Table 4.2 that ,a significant number (83.3%) the respondents participate in market. Not all respondents participate in cattle trading throughout the year. The results show that 50% (N=30) participate in market during holiday and when the price is low relative to other seasons. About 30% participate only during holidays and the market participation of 18% of the respondents is not season or holiday driven, but to immediate cash need.

The sole reason for purchase of cattle by respondents is for own use. The type of cattle marketed is dominated by males (84%). There is seasonality in supply of cattle as pointed out by (83%) of the participants. The seasonality in supply of cattle to market is affected by drought and lack if grazing land (67%). Others (33%) reported that price change also contributes into fluctuation in supply of cattle to market.

Based on the response from the survey the physical observation of the animals is used to proxy live weight. Over 66% of the respondents feel that cattle traded are of good condition, while the rest 34% indicated that the cattle conditions are fair and poor. The most preferred age groups of cattle were not equally agreeable by all respondents; with half of the respondents prefer age groups between 4-5; 33% preferring 3-4 years and 17% looking for animals below 2 year age.

The table also shows the mode of transportation, market facilities, type of cattle highly demanded, the time of the day preferred to purchase cattle in terms of price, and time of the day cattle prices peak. The sample respondents pointed out that the most common mode of transportation used to reach the market is trekking, 84% of the respondents replied that they use trekking to bring their cattle's to the market. All of the respondents pointed out that there are no market facilities and services available.

Slaughter and working cattle are reported, 50% of respondents to have high demand in market. 17% of the respondents indicated that working cattle are in high demand.

According to the response of market participants, 83% of the response indicted that the most preferred time of day to purchase cattle on the market is between 10 AM -12noon and 1PM-2PM. A lower percentage (17%),were indifferent about the time of day preferred for purchasing cattle Furthermore 63% of participants indicated that cattle demand and price reaches their peak in the rainy season, while others(17%) said this happens in the dry season.

See the table below.

Characteristics Examined	Mean Result
Reason variation in the supply of animals	
Drought and grazing land	67%
Body condition of animal Demanded and purchased	
Good body condition	66%
Age group of animal demanded	
4-5 years	50%
3-4 years	33%
< 2 years	17%
Mode of transportation	
Trekking	84%
Trucking	16%
Type of cattle purchased	
Slaughter and working	50%
Working	17%

Table 4.2 Descriptive statistic results of Different characteristics examined

The animal body condition and respective prices charged during the market house are depicted on the Table 4.3 as follows:

Variables	Mean	Maximum	Minimum
Price of animal charged in respect of body Condition			
Good	5525	7000.00	5500.00
Fair	2767	4000.00	3000.00
Poor	1150	3200	1550.00
Live weight in kilogram	270	400	105
Price of animal per kilogram live weight			
Good	20.46	17.5	52.38

Fair		10.25	10	28.57
Poor		4.25	8	14.76

From the table 4.3 indicated that the weekly mean price per head ranges with respective animal body condition. i.e. 5525, 2767, 1150 Ethiopian birr (ETB) for Good, Fair and poor body condition respectively. As traders indicated that the maximum price and body condition of animal that can found in the market id during the peak hours of 10 AM-12 noon and 1PM-2PM. The possible reason could be for this is, significant attention were given to the body condition by producers in the supply side during this peak hours and also more traders can found in the market in expectation of good animals will exactly get at that time .

The mean weight traded animal in the market as indicated by traders that 270 Kilogram (Kg), 400 Kg with maximum score and 105 Kg. the mean price per live for good body condition that is the major animal want to trade by traders as indicated on the result that 20.46 ETB. This indicates that traders if they want to buy animals with the good body condition, they are expected to sacrifice 20.46 ETB for single weight of animals.

4.2 Market Facilities

Dimeka market is categorized as the primary market (Getnet, 2011). The main actor in such market is pastoralist (producer), and the main buyers are traders and pastoral traders. For primary market to function under normal condition, there are certain facilities that are needed in the market. From the interviews and questionnaire result, the researcher designed the following comparison of basic facilities in primary market.

Market facilities at primary market	**Status of the existing facilities in Dimeka market**
Good Market information backed by modern communication networks like telephone, mobile, digital price signals	No means of modern communication network and sources except little mobile phone with full of network problems
Good road networks that connect kebels ,Woreda's that can be potential source of buyer and seller	Rugged road where sometimes pastoralist forced to travel long distance to reach market. Traders are also forced to wait long time to have vehicles to and from market.

Well-designed market centers that contains Holding area with fences for cattle's, feeds and water, shades to traders and nearest transport catch up area, Banking and credit facilities and services.	Miss-placed market locations to pastoralist Well as buyer; lack shades, place to stay and also with no credit availability, traders forced to borrow money from informal basis (i.e. from Friends and relatives) with high cost of borrowing and short time repayment schemes.
Well-designed transporting vehicles to carry animals during market day. With high frequency of getting cars.	Traders take uncomfortable transportation vehicle (*Isuzu car*[7]) to take their animals to and from the market center. Which result on weight loss and death of animals? Pastoral sometimes are force to walk long distance to reach market because of in accessibility of vehicles.
Minimized or little interventions of illegal traders through designed rules and regulation as well as well protection of the designed rules and regulation from the concerned parties (trade office , revenues and customs office and police officers ……..)	One of the treats to legal traders by involving illegal price competition that can disrupt the normal operation of the market. Little or No legal protection in the side of concerned parties, Due to insignificant attention was given.
Inspection of animal health status during the get of market areas and on sold animals	No attentions were given due to lack of Awareness from stakeholders.

In general, from the result we can conclude that market lacked essential elements of primary market. This will have significant negative impact on the realization of the benefit from the market, as well as creating inefficiency through resource wastage, and creating hurdle to active use of the market by the actors.

[7] Isuzu car is vehicle which is the most common means of transport system in Dimeka.

4.3 Econometrics Analysis

In order to empirically identify the determinants of cattle price, an effort was made to estimate the log transformed version of dependent variable. As the dependent variable is log transformed, the coefficient should be interpreted as a percentage change in a price per live weight brought about by a unit change in the respective independent variable. The estimation result is displayed below:

Table 4.4.Estimated parameters factors contributing to variation of cattle price

Explanatory variables	Ln (price of live weight animal)	
	Coefficient	
Constant	0.560***	1.2002
Sex of animal		
Male	0.523***	1.324
Female	0.124	2.567
Age: <2 years	0.212***	3.210
2-3 years	0.321***	4.01
>3-4 years	0.421***	2.1
>4-5 years	0.4710***	3.0065
>5 years	0.211***	2.0264
Body condition:		
Good	0.4678***	-8.1245
Fair	.3578***	-7.352
Poor	-7.2E-02**	-3.310

Purpose		
Slaughter	-6.14E-02***	-3.14
Working	-5.321E-02**	-2.4642
Breeding	-5.095E-03	1.047
Time of sale		
6AM-8 AM	-4.25E-03	2.153
8AM-10AM	2.0194E-02	0.643
10AM-6 Noon	7.973E-02***	-4.01675
12 Noon-2 PM	6.253E-02**	-3.01325
2PM-4PM	-1.345	0.567
Adjusted R^2	0.5632	
F value (19, 60)	60.634***	
Vif	1.2351	

N.B:*** and ** indicate statistically significance at 1% and 5% level respectively

From the table it can be illustrated that f-value is significant at 1% level and the adjusted R^2 showed that 56% of the variation logarithm live weight of cattle is explained by the explanatory variables. The coefficient of the sex variable of animal being male showing positive statistical significant value. The justification for this is due to higher demand of Male for slaughtering and Working purpose rather than aiming of breeding. As most of them indicated their view in this regard, there is high probability of reseal value from of male cattle by fattening since the market is highly dominated by traders and pastoral traders with strong focusing of animals for slaughters and working on farm base . The age variable is statically significant and strong price charges are shown for age group 4-5 years and 3-4 ages. This implicate that the majority of participant are interested in these two age group, especially when participant believes that the animals will have a strong resell value; as well as chance to get animals with a good body condition when transacting in those two age categories. Therefore it can be concluded that the significant price charge, in the market to this specific age group, is seen because of the above possible reasons.

The cattle body condition has a significant impact on the price as it is illustrated in Table 2. Decline in body condition results in lowering of price of cattle at market. This result is consistent with other studies (Andargachew and Brokken, 1993). This imply that cattle prices in Dimeka are likely to increase with improvement in the body conditions of cattle; and most of the time market participants prefer to transact cattle with a good body grade (condition).As indicated in the result it can concluded that traders in Dimeka market are willing to pay good price for good body condition, this will benefits cattle's sellers by generating significant money from their cattle sell and it will inspiring them on reforming their herd management system in line with market need.

The variables that entail the purpose of purchase is more concentrated at Dimeka market mainly for two purposes i.e., slaughter and working as shown in the above Table 4.4 and both of the two purposes have a strong statistical significance at a respective level. This possible justifications could be buyers have strong barraging power and negotiation skill in price setting when they aim at transacting for the purpose of slaughtering and working cattle's, this is due to the fact that participant buy at lower price and resale it at high price premium in form of *Kiretcha* or resell it when the prices goes up.

The same is true for breeding purpose, as indicated in the result still buyer receive price discount but it is not as such significant like buyer who aims for slaughter and working purpose. This is because, there might be shortage of feed source; and lack of enough space to keep more cattle's; or there might be inadequate knowledge about improved herd management practice; or traders might not realize the economic value of cattle that they purchased immediately. Purpose of buying in Dimeka market has deterministic effect on price of live weight of animals offered in the market.

The variable time of day shows statistically significant positive price charges (Table 2).Price peaks to its maximum level between 10 AM-12 noon, and 1PM-2PM. Within this time period, seller would be benefited by selling their animal. The reason behind price reaches maximum level within this time period is assumed to be the existence of large number of buyers and competition between them and also market reach its peak of period.

Regarding the season, Table 2, shows, significant positive and negative coefficient are attached with festival and dry time, respectively which implies that cattle price peak during the festival time. In this regard seller very much if they keep their animals till the festival period, because

During this period buyer usually pre allocate certain amount of money for the holiday. In other way seller at Dimeka market sell animals at a discount price during dry season due to shortage of feeds, water shortage, strong need of cash to purchase food and industrial material for them to survive. So it can be conclude that during the dry season pastoralists are disadvantaged because of the unfavorable term of trade, and also that buyer do have more opportunity to buy from other market.

- **The Interaction effect**

The estimated parameters of interaction effect live weight price are presented detail below:

Table 4.5 interaction effect on live weigh price;

Variables x Weight	Coefficients
Sex of animal x weight	
Male	0.23**
Female	0.124
Age x weight :	
<2 years	0.212
2-3 years	0.321
>3-4 years	0.421***
>4-5 years	0.3710***
>5 years	0.211***
Body condition x weight	**Slaughter Working Breeding**
Good	
Fair	
Poor	
Purpose x weight	

0.4278*** .3578*** -7.2E-02**	

-4.14E-02**

-4.321E-02**

.095E-03

Time of sale x weight	
6AM-8 AM	-4.25E-03
8AM-10AM	2.0194E-02
10AM-6 Noon	.973E-02***
12 Noon-2 PM	2.253E-02*
2PM-4PM	1.345
High demand season x weight	
Festival period	9.63E-03***
Wet period	2.156E-02
Dry period	-6.63E-03***

Where: ***, * and **indicates statistically significance at 1%, 10% and5% level respectively.

When we look at details of the interaction of live weight with that of the variables, On the sex viable interacting with weight , implies that whenever the male castles are supplied in Dimaka market with good weigh measure , it will have significant price premium to producers as well as buyer they don't hastate to pay the asked price .

The same implications are seen in the age of animals when they are high weight with age group of 3-4 year and greater than 4 years have significant price charges are seen.

Regarding the time of sale , animals with high weight when they are sold out of the time period exactly in between 10 AM-12 noon and 1 PM- 2-PM have lower price charge than mention time period . this is because, on the first time period(10AM-12noon) there is high traders(participants) exists from that of other time period except 1PM-2PM. Regarding the possible reason for the second price peak hours period is, traders at this time period, they are in rash hours to peak animals as last resort before they left the market .

Producers in dry period, they are the most disadvantageous even though they supply good weight of animals, that was the reason why indicated on the result, significant negative price charge for the interacting variables.

CHAPTER FIVE

Summary, Conclusion and Policy Implications

5.1 Summary

The livelihood of pastoral society is mainly dependent on the activity of livestock husbandry and their main source of income is the sale of livestock and livestock products. Pastoralists in addition to using livestock as a source of food and as a form of saving and wealth, sell animals in needs of cash. The incomes they generate from selling help them to diversify income sources and build their capital base. This means livestock market and price estimation s have a crucial impact on the livelihoods of pastoral communities as well as traders. In market, Prices are very important measure of market performance and efficiency. Prices are also, indicator of producers' incentives and a basis of government revenue from the livestock market related services.

Nevertheless, there has been a limited empirical knowledge regarding what determine the market price of livestock population. Therefore, in order to close the gap this research attempted to focus on identifying the factors that determine the market price of cattle in south-western Ethiopia, specifically the Hammer Woreda, Dimeka market.

The specific objective of the study was to identify market participants, to examine the existing market facilities and to identify factors that affect cattle market prices, which drives pastoralists to send their cattle for market. To achieve these objectives, the researcher visited the market facilities and carried out an inventory; collected primary data from market participants; conducted key informant interviews with Woreda administrators. Primary data was collected from 60 sample respondents through structured questionnaires administered during 8 market days. The data was analyzed using descriptive statistics and multiple log linear models to see the deterministic relationship between the stated variables and the price of live weight of cattle. As indicated the result, prices usually build up and peak during occasions like festival periods, up to 9% increment in the price of animal during in a specific market day, and it is clearly indicated on the Econometric result of the coefficient of festival period time. The decline trends are during the Dry season up to 6% price decrease in single market day during the dry season and it is clearly depicted on the econometric result outlined for respective dry season coefficient. The time of day when

transactions are made has significant effect on the operation of the market as well as price. At Dimeka market the time of day between 10AM - 12 noon and 1PM-8PM has been recorded as the best hour for pastoralists (producer) to sell cattle that was the reason why it indicated on the econometric result having positive statistical results .The body condition of cattle had an observable effect on the price determination at the Dimeka market. To sum up, age, body condition, time of transaction, purpose, and other factors like that of season, market facilities and veterinary services play a significant role in the determination of cattle price at Dimeka market.

5.2 Conclusion

Based on the result obtained from the analyses, the following conclusions are drawn:

1. Sample market was underdeveloped, inefficient and characterized by, inadequate or lack of marketing facilities and services.
2. The Dimeka market was dominated by pastoral traders and traders. Pastoral traders involve in the transaction process with the purpose of restocking i.e. with the purpose of increasing herd size to express their status. Others who are engaged in cultivation use market to also acquire working cattle. The traders, on the other hand, transact with the purpose of reselling in order to get marginal profit.
3. The animal attributes including age; body conditions cores; buyer's purpose; time of sale/purchase during the day; and festival periods are the most important variables explaining the variation in cattle price.
4. Cattle buyers could benefit more if they also engage in buying animals from pastoralist, especially during the dry season when grazing and water are short supply. Producers need to also take advantage of the specific festive time to gain better price of animals and also to send more animals to market. Price information is useful in designing appropriate cattle pricing; and to help avoid unfair cattle price offers.

   There for the following attentions should be given:

- **Training and skill development;**
  - Pastoralists and market traders should be trained on the procedure of estimating the live weight of cattle. Selling on the basis of eye-balling does not give producers a fair ground on price deals.

- Increasing awareness on the effect of trekking animal long distance and its impact on price.
- Training of the local extension workers and local government on the use of livestock market information and on how best to reach the producers with the accurate and timely information.

❖ **Technical and infrastructural development;**

- Building of sufficient Market facilities; holding areas, sheds in the market, communication networks, digital price signals in line with weigh measurement instruments and improved road condition that can interconnect different Woredas.
- Modern and adequate veterinary services should be available in the market to follow up the health status of cattle. Also provision of suitable structure to provide water and feed sources at a market center in order reduce weight loss, requires immediate attention.

❖ **Institutional development;**

- There should be financial institutions and services available near the market to help the market participants get access to capital.
- Well established research departments; that can solve problems of pastoral community by identifying incidental diseases, up-to-date techniques to develop potential resources and source of information to different stakeholders.
- There should be promotional activities on the livestock resources that the Woreda encompasses from the side of Woreda rural development offices.
- There should be facilities in creation of dialogue and partnership among pastoral community and local authority to develop, manage and maintain livestock markets.

❖ **Policy issues;**

- Fair treatment of traders on the taxing system. There should be greater effort and more in depth analysis on how to minimize illegal traders. Finally, there should be facilities in creation of dialogue and partnership among pastoral community and local authority to develop, manage and maintain livestock markets.

5.3 Limitation of the study

In carrying out this study the researcher was faced with limitation of budget and logistic. The projected budget and logistic support to collect data from market participants was not sufficient. This is because the actual data collection took much longer time given that the traders were not easily reachable at the scheduled time, and the key informants and pastoralists took longer time than expected to provide the required information. This meant staying longer time in the field and also more money spent on transport and accommodation, which were the researchers out of pocket expenses.

Reference

Abbot, J. C. and Makeham J. P., 1979. Agricultural Economics and Marketing in Tropics Intermediate Tropical Agricultural Services, Long man Group Limited, Hong Kong.

Adargachew K. and Borrken K. 1993. Intra annual Sheep Price pattern and Factors underling price volatility in Central Highlands of Ethiopia. Journal of Agricultural Economics; 8(2):125-138.

Aklilu N., Dawit A. and Ayalneh B. 2013. Sheep market price determinants in the central rift valley of Ethiopia. International journal of Agricultural Economics and Extension Vol.1(1), pp.010-016

Behnke R. and Odessa C.. 2012. The Economics of pastoral livestock Production in Sudan, Feinstein International Center .Strengthening the humanity and dignity of people in crises through Knowledge and Practice, Tufits University

Belachew H. and Jembru E. 2003. Challenges and opportunities of livestock trade in Ethiopia. Challenges and opportunities of livestock marketing in Ethiopia. In: Yilma Jobere and Getachew Gebru (eds), Proceedings of 10th annual conference of the Ethiopian society of animal production (ESAP) held in Addis Ababa, Ethiopia, August 22-24, 2002 ESAP, Addis Ababa, Ethiopia.

Berhanu G. , Hoekstra D and Samson J. 2007. Heading towards commercialization? The case of live animal marketing in Ethiopia. Improving Productivity and Market Success (IPMS) of Ethiopian Farmers Project Working Paper 5. ILRI (International Livestock Research Institute), Nairobi, Kenya. 73 pp.

Chris B ,2001. Livestock pricing and markets performance. Risk Management Project, Cornell University.

Chris B. and Christopher B. 2003. Livestock pricing in the northern Kenyan rangelands. Journal of African Economies, volume 12 (Number 2), 127-155.

Clodius, R. L. and Muller W. F., 1961. Market structure analysis as an orientation for research in Agricultural Economics. Journal of Farm Economics, XLIII, pp. 513-546.

CSA (Central Statistical Agency), 2014. Report on Livestock and Livestock Characteristics; Agricultural Sample survey; Central Statistical Agency, Federal Democratic Republic of Ethiopia, Addis Ababa, Ethiopia.

CSA (Central Statistical Agency), 2010. Agricultural Sample Survey; Central Statistical Agency, Federal Democratic Republic of Ethiopia, Addis Ababa, Ethiopia.

Cundiff, E.W. and, Still R.R., 1964. Basic marketing concepts, Environment and Decisions.

Prentice-Hall, Inc, Englewood Cliffs, New Jersey.

Fufa S. B. , Girma G. and Techane B. 2012. Animal Handling during Supply for Marketing and Operations at an Abettors in Developing Country: The case of Gudar market and Ambo Abettor, Ethiopia. Journal of Service Science and Management, 2012, 5, 59-68.

Gezahgne A., Jabbar MA, Hailemariam T, Elias M. and Getahun K. 2006. Seasonal and inter-market difference in price of small ruminants in Ethiopia .journal of food product marketing 12(4):5978

Getenet H. 2011. Livestock Market Enhancement Study , Hammer Woreda, South Omo Zone. Pact Ethopia ,Addis Ababa , Ethiopia.

Gujarati S. (2007). Basic Econometrics. *McGraw Hill, Inc, U.S.A* .

Hailemariam T. , Getachew L. and Dawit A.. 2008. Live Animal and Meat Exporter Value Chain for Selected areas in Ethiopia: Constraints and opportunities for enhancing meat exports. Improving Market Opportunities. Discussion Paper No.12 ILRI (International Livestock Research Institute), Nairobi, Kenya. 56 pp.

Handfield R. and Betchel C. 2002. The Role of Truest Relationship in Improving Supply Chain Responsiveness. Industrial Marketing Management 31(4):367-382

Jabbar M.A., Ahmed M.M and Belachew H. 2003. Livestock marketing in Ethiopia: A review of Structure Performance and Development Initiatives. Socio-economic and Policy Research Working Paper 52. ILRI (International Livestock Research Institute), Nairobi, Kenya.

Javier G. and Dulce C.. 2006. Touching Ethiopia. Shama books .Davison of shama Plc. Addis Ababa, Ethiopia.399pp.

Kohl's, R.L. and Uhl J.N., 1985. Marketing of Agricultural Product. fifth ed., Coiler Mac, Milan, U.S.A.

Maddala G. S. , (1998). Econometrics. Mc Graw Hill, Inc, U.S.A .

Magrath, P. 1992. Methodologies for studying Agricultural marketing in developing Countries. Marketing series 2, Chart ham, UK: Natural resource Institute.

McCoy, J. H. and Sharan M. E. , 1998. Marketing Staples food crops in Tropics Africa .London, Cornell University Press.

Mendoza, G. 1991. A Premier on Marketing Channels and Margins. Analytical Methods. Price Analysis. 257-75.

Mussemwa M. , 2008. Nguni Cattle Marketing Constraints and Opportunities in the Communal Areas of South Africa. African journal of Agricultural Research 01/2008: 3:239-245.

Ouma E. , 2007. Measuring Heterogeneous Preferences for Cattle Traits Amongst Cattle Keeping Households in East Africa. American journal of Agricultural Economics. Am. J. Agr. Econ. (2007) 89 (4): 1005-1019.

Sara P. 2010. Livestock marketing in Kenya-Ethiopia Border: A baseline study. Sara Pavanello, HPG (Humanitarian Policy Group) Working Paper.

Samuel B. and Jabbar MA. (2004). Trader behavior and transaction costs: In live animal marketing in Ethiopia. Paper presented at the workshop, on improved land management and agricultural market development in the Ethiopian highlands. Addis Ababa, Ethiopia.

Samuel B, Pender J and Eshi S. 2014. Policies for livestock Development in the Ethiopian Highlands. Agriculture ,Natural Resource and the Environment Development and Technology ,Vol 5, pp 491-510.

Scarborough, V. and Kydd J. 1992. Economic analysis of Agricultural Markets. A manual marketing series 5, Chartham UK: Natural resource Institute.

Solomon D ., and N. Tilahun, 1983. Pastoral system research in sub Saharan Africa. Proceeding of the workshop held at International Livestock Center for Africa (ILCA), Addis Ababa, Ethiopia, March 21 to 24.

Solomon T. 2004. Performance of Cattle Marketing system in Southern Ethiopia: with Special Emphasis on Borona Zone. MSc thesis work , Alemaya University ,Harare.

Takalign T. 1988. An Economic Analysis of Livestock Marketing: The case of cattle marketing along the Trade route from Bale to Addis Ababa. Msc thesis work, Addis Ababa University, Addis Ababa, Ethiopia.

Tefera, S. 2014. Change in livestock mobility and Grazing Pattern among the Hammer in Southern Ethiopia. African Study Monographs, Graduate School of Asian and African Area Studies, Kyoto University, Suppl. 48: 99–112.

Teklewold H, Getachew L, Dawit A and Asfaw N. 2009. Determinants of livestock Prices in Ethiopian Pastoral livestock Markets: Implication for Pastoral Marketing Strategies. Contributed Paper prepared for presentation at the International Association of Agricultural Economists Conference, Beijing, China, August 16-22, 2009.

Teressa A.2006. Determinants of Market Prices of Cattle in Eastern Ethiopia. Contributed paper prepared for presentation at the International Association of Agricultural Economists Conference, Gold Coast, Australia, and August 12-18, 2006.

Teshager A, Belay D. and Taye T. 2013. Traditional Cattle Fattening and Live Animal Marketing System in Different Agro-Ecologies of Ilu Aba Bora Zone, Oromia, Ethiopia, Department of Animal science, College of Agriculture and Veterinary Medicine, Jimma University, Jimma, Ethiopia.

William G. 2014. Agricultural Product Prices Ithaca and London: Cornell University press. Agricultural product prices. Cornell University Press, 2014.

Williams T.o, Spycherb and Okikei. 2006. Improving livestock Marketing and Intra Regional Trade in West Africa; determining appropriate Economics Policy, economic incentive and policy frameworks .ILRI (International Livestock Research Institute), Nairobi, Kenya. 122pp.

Wolday A. 1994. Food and Grain marketing development in Ethiopia, after the market reform of 1990: A case study of Alaba Siraro District. Koster Publisher, Berlin 328.

QUESTIONNAIRE

DETERMINANTS OF CATTLE MARKET PRICE

Dear sir/Madam:

I am conducting a research in the area of determinants of cattle market price as part of my masters' study at St. Mary University Institute of Agriculture and Rural development studies. The purpose of the study is to identify the determinants of cattle market price in Dimeka market and to propose solution on the challenges and strengthening the positive side based on the result to be identified. Given your current participation within the market, I am kindly asking for your participation in the survey.

I am grateful for your participation and would like to extend my sincere thank you to you. I am looking forward for your replay.

Thank you for your cooperation in advance.

Sincerely,

Regan Kebede.

Section A: Biographical data

Personal Characteristics of the Respondents. Please indicate your choice by making an X on the relevant answer.

1. Name: _____
2. Age: _____
3. Main occupation:
   A. Pastoral trade
   B. Trader
   C. Hotel owner
   D. Butcher
   E. Ordinary customer
4. How long have you been in cattle trading?
   A. < 1 year B. 1-5 Years C. 5-15 Years D. 15-20 Years

Section B: Questionnaire to be filled by market participants

5. Do you participate in cattle trading year round?
   A. Yes B. No
6. If yes, at what period of the year do you participate?
   A. Holiday B. when the price becomes low C. Both

   D. other period of the year (specify) _____
7. For whom do you purchase cattle for?
   A. For own B. for others
8. Which sex group would you like to transact?
   A. Male B. Female C. Both D. indifferent
9. Indicate the respective price want to pay for male and female cattle for the same body condition

Male cattle

Body condition	Price Payment during market day
Good	
Fair	
Poor	

Female Cattle

Body condition	Price Payment during market day
Good	
Fair	
Poor	

10. Base on Q.8 what was your reason behind?

_____

_____

_____

_____

_____

11. Does the supply of cattle in this market vary from season to season?

A. Yes B. No

12. If yes, what is the reason behind?

A. Price change
B. Transportation problem
C. Drought/ lack of grazing land
D. Disease incidence
E. Other (specify) _____

13. How do you identify the size (weight) cattle's?

A. Sight judgment B. based on scientific measurement (Kilogram C. other (specify)_____

14. If your answer on Q.12 is kilogram, would you list up the proportion of Price payment for a given weight from your experience?

Weight in Kg	Price

15. If your answer in Q.12 is A, can you level (grade) the body condition of castles traded in the market Most of the time?

A. Good B. Fair C. Poor

15. Based on your answer to Q14. How much do you offer for cattle price per head when the body condition is Good, Fair and Poor?

Good: ----------

Fair: ----------

Poor: ----------

16. Which age group of cattle's would you like to transact today?

A. <=2year B. >2 up to 3 years C.>3 up to 4 year

D. > 4 up to 5 year E. > 5 years

F. others (Specify)_____

17. What mode of transportation do you use?

A. Tricking

B. Trucking

C. Other

18. Are their complete market facilities and services in this market?
    A. Yes
    B. No
19. If yes, please indicate or explain the available market facilities or services?

Facilities	Services

20. If No, what is the reason?

_____

_____

_____

_____

_____

_____

21. Which type of cattle is highly demanded in this market?
    A. Slaughter cattle
    B. Working cattle
    C. Breeding cattle
    D. Both slaughter and working
22. During what time of the day, do you think purchase of cattle is preferable in terms of price and indicate the price charge with respective body condition of animal (good, Fair and poor condition?

A. 6AM-8 AM (good -------fair-----poor-----)

B 8AM-10AM (good ---- fair -------poor------)

C.10AM-6Noon (good------fair---- poor------)

D 12 Noon-2 PM (good------- fair-------poor-----)

E. 2 PM-4PM (good -----fair----------poor---------…)

23. At what time of the year does a cattle supply demand and price reaches their respective **peak**? Price
    A. At festival period ----------
    B. At wet time period ----------
    C. At dry time period ----------
24. At what time of the year does a cattle supply demand and price reaches their respective **trough**? Price
    A. At festival period ----------
    B. At wet period ----------
    C. At dry period ----------
25. Do you have market information before you bring your cattle to the market?
    A. Yes
    B. No
26. What are the sources of working capital for you?
    A. own
    B. Relatives
    C. borrowed
27. If you borrow from where?
    A. Bank
    B. Private money lend
    C. Relatives
    D. Friends
28. How much do you borrow? _____ Birr

29. How much was the interest rate? _____

30. How does the repayment schedule look like?

_____

_____

_____

_____

_____

31. What type of problem did you face in cattle trading?

_____

_____

_____

_____

32. What do you think about the solution for the problem?

_____

_____

_____

_____

_____

_____

Section C: Questionnaire to be filled by the Woreda administrators

33. Name: _____

34. Position: _____

35. What type of service do you provide to the cattle marketer?

_____

_____

_____

_____

36. What should be added to the service that your office provides?

_____

_____

_____

_____

37. Have you ever meet the market participants for a meeting or training?

A. Yes B. No

38. If yes, how many times? _____

39. Do you perform a follow up on the training your office offered to the participants?

A. Yes B. No

40. What was the result look like?

_____

_____

_____

_____

_____

41 What do you think is the good side of Dimeka market and it's down sides?

_____

_____

_____

_____

_____

___

42 What do you suggest to the marketers and your office in order to promote the operation of Dimeka market?

Appendix

Table 4.1 personal characteristics of the respondents

Main occupation of the respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	pastoral trader	20	32.	32	33.3
	Trader	38	66.7	66.7	66.7
	Hotel owners and butchers	2	1.3	1.3	1.3
	Total	60	100.0	100.0	100.0

Table 4.2 Response by market participants

How long have you been trading

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5 years	30	50.0	50.0	50.0
	>5-15 years	10	16.7	16.7	66.7
	>15 years	20	33.3	33.3	100.0
	Total	60	100.0	100.0	

Participate in cattle trading year round

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	50	83.3	83.3	83.3
	no	10	16.7	16.7	100.0
	Total	60	100.0	100.0	

Period of the year you participate

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	holiday	20	33.3	33.3	33.3
	both	30	50.0	50.0	83.3
	other	10	16.7	16.7	100.0
	Total	60	100.0	100.0	

For whom you purchase cattle for

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	own	60	100.0	100.0	100.0

Sex of cattle you like to transact

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	50	83.3	83.3	83.3
	indifferent	10	16.7	16.7	100.0
	Total	60	100.0	100.0	

Supply of cattle variation from season to season

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	50	83.3	83.3	83.3
	no	10	16.7	16.7	100.0
	Total	60	100.0	100.0	

Reason for variation of cattle supply

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	price change	20	33.3	33.3	33.3
	drought	40	66.7	66.7	100.0
	Total	60	100.0	100.0	

Identification of weight of cattle

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	sight judgment	60	100.0	100.0	100.0

Grades of cattle body condition traded mostly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	good	40	66.7	66.7	66.7
	fair	10	16.7	16.7	83.3
	poor	10	16.7	16.7	100.0
	Total	60	100.0	100.0	

Which age group of cattle transacted you like to transact

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<=2 years	10	16.7	16.7	16.7
	>3-4 years	20	33.3	33.3	50.0
	>4-5 years	30	50.0	50.0	100.0
	Total	60	100.0	100.0	

Mode of transportation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	tricking	50	83.3	83.3	83.3
	trucking	10	16.7	16.7	100.0
	Total	60	100.0	100.0	

Market facilities and services available

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	60	100.0	100.0	100.0

Cattle type highly demanded

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	slaughter cattle	20	33.3	33.3	33.3
	working cattle	10	16.7	16.7	50.0
	both slaughter and working	30	50.0	50.0	100.0
	Total	60	100.0	100.0	

What time of the day preferred to purchase cattle

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4-6 hour	10	16.7	16.7	16.7
	6-8 hour	50	83.3	83.3	100.0
	Total	60	100.0	100.0	

Time of year cattle supply demand and price reaches their peak

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	festival period	30	50.0	50.0	50.0
	dry time period	30	50.0	50.0	100.0
	Total	60	100.0	100.0	

when cattle supply demand and price reaches their trough

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	festival period	10	16.7	16.7	16.7
	wet period	40	66.7	66.7	83.3
	dry period	10	16.7	16.7	100.0
	Total	60	100.0	100.0	

Do you have market information before you transact

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	20	33.3	33.3	33.3
	No	40	66.7	66.7	100.0
	Total	60	100.0	100.0	

Sources of working capital

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Own	20	33.3	33.3	33.3
	Relatives	10	16.7	16.7	50.0
	Borrowed	30	50.0	50.0	100.0
	Total	60	100.0	100.0	

Appendix5: Regression Estimates of Determinants of Price per Live Weight

Explanatory variables	Ln (price of live weight animal	
	Coefficient	T-value
Constant	0.560***	1.2002
Age: <2 years	0.212***	3.210
2-3 years	0.321***	4.01
>3-4 years	0.421***	2.1
>4-5 years	0.4710***	3.0065
>5 years	0.211***	2.0264
Body condition:		
Good	0.4678***	-8.1245
Fair	.3578***	-7.352
Poor	-7.2E-02**	-3.310
Purpose		
Slaughter	-6.14E-02***	-3.14
Working	-5.321E-02**	-2.4642
Breeding	-5.095E-03	1.047
Time of sale		
12-2 hour	-4.25E-03	2.153
2-4 hour	2.0194E-02	0.643
4-6 hour	7.973E-02***	-4.01675
6-8 hour	6.253E-02**	-3.01325
8-10 hour	-1.345	0.567
High demand season		
Festival period	9.63E-03***	-4.02699
Wet period	3.156E-02	-0.5604
Dry period	-9.63E-03***	-4.01269
Adjusted R^2	0.5632	
F value (19, 60)	60.634***	
Vif	1.2351	

N.B:*** and ** indicate statistical significance at 1% and 5% level respectively

Source: Survey result