ANALYSIS OF BEEF CATTLE MARKETING PERFORMANCE: THE CASE OF GERA WOREDA, JIMMA ZONE, OROMIA REGIONAL STATE, ETHIOPA

MSc. Thesis

BY

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Thesis submitted to the School of Graduate Studies Jimma University

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Major Advisor: Adeba Gemechu (PhD)

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I have completed my thesis research work as per the approved proposal and it has been evaluated and accepted by my advisors hence, I kindly request the department allowed me to present the findings of my work and summits the thesis .

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_____ _____ _____

Chairperson, CGS Signature Date

DEDICATION

I dedicate this thesis to my God and Lord for everything that he made things to happen in my life.

STATEMENT OF THE AUTHOR

I declare that this thesis is my own work and I acknowledged all of the sources that I have been used as reference in this work. This thesis has been submitted to Jimma University College of Agriculture and Veterinary Medicine in partial fulfillment of the requirements for M.Sc. degree in Agribusiness and Value Chain Management. It is deposited in the University Library to make it available for borrowers under the rules and regulations of the Library. I also declare that this thesis is not submitted to anyone or any other institutions anywhere for award of any certificate, diploma, and degree and above. But this thesis is allowed without any special permission provided that precise acknowledgement is made. However, any other special permission for special cases must be obtained from the author.

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BIOGRAPHICAL SKETCH

The author was born on Friday, July 01, 1983in Wonchi Woreda South West Shewa Zone, Oromia Regional State, Ethiopia. He attended his elementary education (grade 1 to 6) at Dulele Kori Elementary School, grade 7 at Darian School Wonchi Woreda, grade 8 at Bulbulo School,Gomma Woreda, Jimma Zone, Oromia and Secondary school at Agaro High school in between 2000 and 2001. He joined Asella ATVET College in 2002 and graduated in three years Diploma in Animal Science and then joined Jimma University in 2010 and graduated in first Degree in Animal science on 28 June,2012 and also, he graduated from Yardstick International College of distance an open learning in first Degree in Agricultural Economics on 17 April, 2012.

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ACRONYMS OR ABBREVIATION

ACDI/VOCAA	Agricultural Cooperative Development International/ Volute in Overseas Cooperative Assistance
ACTESA	Alliance for Commodity Trade in East and Southern Africa
CASCAPE	Capacity building for scaling up of evidence-based best practices in agricultural production in Ethiopia
COMESA/SADC	Common Market for Eastern and Southern Africa /southern African Development Community
EEA	Ethiopian Economics Association
EEPRI	Ethiopian Economic Policy Research Institute
ELMP	Ethiopia livestock master plan Roadmaps for growth and transformation
ESAP	Ethiopian Society of Animal Production
EU	European Union
FAO	Food and Agriculture Organization
FMD	Foot-and-Mouth Disease
GDP	Gross Domestic Product
GTP	Growth and Transformation Plan
IGAD	Intergovernmental Authority for Development
ILRI	International Livestock Research Institute
LLP	Livestock and Livestock Products
LMA	Livestock Marketing Authority
MoA	Ministry of Agriculture
MOFED	Ministry of Finance and Economic Development
NABC	Netherlands-African Business Council
NEPAD-CAAD	New Partnership for Africa's Development Comprehensive Africa Agriculture Development Programme
SPS-LMM	Sanitary and Phytosanitary-Livestock and Meat Marketing
TLU	Tropical Livestock Unit

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ABSTRACT

This study aims at analyzing the Performance of beef cattle marketing: *in Gera Woreda, Jimma Zone. The specific objectives of the study were to: analyze the structure, conduct and performance of beef cattle market; analyze the determinants of market participation and quantity supplied of beef cattle in the study area. The study was based on both primary and secondary data. The primary data was collected from sample respondents of beef cattle market participants such as, producers and intermediaries by using quantitative, qualitative data and informal survey. Primary data was collected from randomly sampled 97 producers with probability proportional to size from sample kebeles therefore, from 30 large traders, 21 have been selected randomly, while from 7 small traders, 4 have been selected randomly. In addition, 2 butcheries and 2 brokers have been selected purposively more experienced for this study. The survey result shows the existence of monopolistic competition market structure in Dusta beef cattle market having with concentration ratios for beef cattle producers indicate a low degree of concentration and thus more competition than the beef cattle traders. Producers in beef cattle market gets high share of net marketing margin relative to other market actors. Econometric model results show that cattle market participation and amount of supply to market is significantly influenced by access to credit, access to veterinary service, access to market information, Public holiday, household family size, household income, number of beef cattle owned, size of land, distance to nearest livestock market and level of education. SWOT analysis results show that the weighted scores are 37.25, 11.66 ,30.4 and 13.7 for opportunities, threats, strength and weakness respectively. Finding of the study indicates that, the performance of the beef cattle marketing system in Gera woreda is poor market facilities, not willing(refusing) to take credit due to religion influence, inadequate scientific fattening know-how's and absence to responsible for supplementary feed providers. Therefore, could be addressed through collaborative and deliberate action of both the producers and government in the study area recommended.*

Key words: Beef cattle market condition, SWOT Analyses and Heckman two stage models.

1 INTRODUCTION

1.1 Background

Agriculture in Ethiopia is the foundation of the country's economy; accounting for half of gross domestic product (GDP), 83.9% of exports, and 80% of total employment. Yet agriculture is the country's most promising resource. A potential exists for self-sufficiency in grains and for export development in livestock, grains, vegetables, and fruits (Matouš *et al*., 2013). Livestock perform 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.

Ethiopia has the largest livestock population and the highest draft animal population in the continent with estimated cattle population of 52 million which more than 38% is contributed by Oromia state (Merera and Galmessa, 2013). Ethiopia now ranks sixth in the World for cattle population, seventh for goats and tenth for sheep which collectively put Ethiopia among the top eight producers of these animals altogether globally. The global share of Ethiopia livestock population reached 2.9%. This enormous population of livestock promises an ample opportunity for the development of the leather industry in the country(AGP,2013).

Due to the different technical, socio-economic and policy constraints, the contribution of the sector is very low even when compared to most of the sub Saharan African countries. Livestock contributes about 20% of the GDP, supporting the livelihoods of 70% of the population and generating about 11% of annual export earnings. The sector has much to gain from the growing global markets for livestock products (Negassa *et al*, 2012). The 10 years' policy and investment road map (2010/11 to 2019/20) shows that livestock is dominated by 32% (ELMP, 2015). For many years, investment for development of livestock production in particular and agriculture in general in Ethiopia are very poor. However, in few recent years, livestock issues are beginning to be put back on Ethiopia's development agenda. As reflected in the Growth and Transformation Plan (GTP), the Ethiopian government has huge interest to develop the livestock sector.

The livestock sector is expected to be promoted through expansion of fattening and milk production via breed improvement as well as pasture development and animal health (MOFED, 2010). According to Ayalew *et al*, *(*2013), Cattle fattening practices in Ethiopia is categorized in to three major fattening systems: traditional system, by product based system and the Hararghe fattening system. In traditional system, farmers usually sell oxen after the plowing season when they are in poor condition and too old for the draught purposes. By-product fattening system is mainly based on agro-industrial by-product such as molasses, cereal milling by- product and oilseed meals. Intensive feeding of the available feed supply to young oxen used for draught power could best describe the Hararghe fattening practice. The Hararghe fattening system is characterized using the available feed resources to young oxen through cut-and-carry feeding system of individual tethered animals. The most common feed types used for this system are thinning, leaf strip and part of maize and sorghum plants.

According to Gebre *et al*, (2013), only a small fraction of Ethiopian beef is raised in feedlots and smallholders throughout the country fatten most cattle in backyard systems. The widely-held perception is that feedlot fattened cattle generally produce softer meat, with white fat and a good proportion of red meat. This meat is preferred for steaks or Ethiopian tibbs (beef cut in strips and fried). Backyard fattened meat is reported to be tougher, with yellow fat, more fat (but less marbling) and less red meat. This is preferred for consumption as raw meat for the local stew called we'et. The backyard fattening is cheaper than feedlot operation, but cannot supply large and consistent volumes to a commercial abattoir or trader.

Ethiopia proposed combined interventions for red meat/milk production on family farms and among pastoralists and agro-pastoralists, as well as feedlot development, would result in a 52% increase in total red meat production. Production would grow from 1.275 to 1.933 million tons between 2015 and 2020. This would not, however, meet expected consumption growth of 58% by 2020 (to 2.008 million tons), leaving a 7% deficit (187,000 tons) in the 2015–2020 red meat production and consumption balance. Given the rapidly growing population and increasing incomes in Ethiopia, such projected deficits would put upward pressure on red meat prices and make it very difficult to meet the GTP II red-meat export goals (ELMP, 2015).

In Ethiopia, there are three levels of livestock marketing structure these are primary, secondary and terminal markets. Primary markets are village level markets with generally less than 500 head of cattle sold per week. Farmers and pastoralist sell animals to traders, other farmers (replacement animals) and sometimes to consumers and local butchers. Generally, there are no facilities for weighing, watering and feeding. Secondary markets are markets where middlemen, trader and butcher dominated markets with a turnover of 500-1000 animals per week consisting of finished, breeding and draught stocks and located mainly in regional capitals. Secondary markets serve the local butchers and feed the terminal markets. Terminal markets are those markets located in the large urban centers and medium to large-scale traders dominate these markets (Altaye *et al*, 2014). Prices depend mainly on supply and demand, which is heavily influenced by the season of the year and the occurrence of religious and cultural festivals (Tewodros, 2008). There are several marketing channels through which products (like cattle) flow to final consumers in both the domestic and export markets. It may involve transportation, handling and storage, title transfers, processing, and distribution (Zewdie, 2014).

Formally, Ethiopia exports approximately 200,000 livestock annually (Aklilu and Catley, 2010). This is significantly higher than the annual official exports of cattle (12,934 head), sheep (13,554 head) and goats (1,247 head) between 1998 and 2003 (Alemayehu, 2011). According to National Bank of Ethiopia (NBE ,2015) the livestock subsector's contribution to the country's total export were $2,374.8 million in 2013, $2,405.08 million in 2014 and $2,387.91 million in 2015. Livestock production in the country mainly relies on indigenous animal genetic resources, however, much has not been done to improve the performance of these resources.This being the potential for export, the actual performance has remained very low, leaving most (55 to 85%) of the projected livestock off take for the unofficial cross-border export and the domestic market. The structure and performance of the live animal market both for domestic consumption and for export, is generally perceived to be poor. According to (MoA and ILRI, 2013) the major technical and institutional challenges that hamper the development of live animals and meat value chain in Ethiopia are identified and for each challenge: underdevelopment and lack of market-oriented production, lack of adequate information on livestock resources, inadequate permanent animal route and other facilities like water and holding grounds, lack or non-provision of transport, ineffective and inadequate infrastructural and institutional set-ups, prevalence of

diseases, illegal trade and inadequate market information (internal and external) are generally mentioned as some of the major reasons for the poor performance of this sector. According to (Gebre *et al*, 2010), Livestock's role in smallholder livelihoods and earnings in the market place can be expanded. Low levels of herd productivity and commercialization affects the present opportunities to increase incomes for producers and market participants and for others in related activities. A series of constraints span the cattle value chain in production, fattening and trading, and commercialization.

In Gera woreda up to date complete information available on the overall structure of livestock marketing system and its performance very small. Thus, information on market routes through the level of the market is missing. Therefore, studies on the performance of marketing system are very important to now on how the marketplaces work. Moreover, current information about the livestock marketing system performance would have its own contribution in improving the livestock market system in the woreda. In fact, the existence of this kind of information may help the government to decide the extent to which it should plan market development. In this study area therefore has a high beef cattle production potential as; the livelihood of smallholders is highly dependent on the cash income from livestock and livestock products and situated far from the main markets; considerable distance needs to be covered before reaching major roads, making access difficult to these markets. The major market Centre in the woreda is Dusta, which is about 8 km from Chira, the capital of the Gera woreda (CASCAPE, 2014). Identifying all the potentials and constraints in the beef cattle marketing system and providing information about its performance well help to use alternative markets that reduce costs and increase the benefit to the people. In general, study on beef cattle's market concentration, market structure, determinants of market participation and quantity supplied, challenges and opportunities about the system can play crucial role to improve beef cattle marketing performance in the woreda and contributes more to related issues, livestock marketing development efforts and outcomes. It then identifies information gaps and recommends research that may help to reduce inefficiencies in the Gera woreda and identify opportunities in the market.

1.2 Statement of the problem

Cattle play a significant economic role in rural Ethiopia in income generation for producer small holder farmers, traders, service providers and butchers, and exporters. The financial accounting of this role is problematic due to non-market roles and functions of livestock and informal trade (Gebre *et al*., 2013). There are, however, key constraints to the productivity of livestock in Ethiopian. These include poor nutrition, poor genetic resources in terms of productivity, and prevalence of animal diseases, unfavorable socio-economic factors, and lack of livestock policy. The area of land allocated to grazing progressively declined through time due to the expansion of cultivation. Scarcity of feed resources is the major bottleneck to livestock production in Ethiopia, where natural pasture and crop residues are the major sources of feed supply to livestock. However, these feed resources are inadequate quantitatively and qualitatively to support reasonable livestock production (Fikru, 2015). As a result of poor production system and poor marketing performance, the existing income generating capacity of livestock as compared to their enormous potential in the country is not sufficient. Livestock contribute 15-17% of GDP and 35- 49% of agricultural GDP, and 37-87% of the household incomes (Endalew and Ayalew ,2016). Sales of live animals are taken as a last resort and large ruminants are generally sold when they are old, culled, or barren. Markets are dispersed with remote markets lacking price information. The annual outflow of beef cattle from Ethiopia through illicit (informal) market is huge 320,000 cattle.

The immediate destinations of this illicit export are Djibouti, Somalia, Sudan and Kenya which are further re–exported to the Middle East countries after meeting domestic demands. Both legal and illegal livestock marketing systems are operating at different magnitudes. Unofficial cross-border trade is practiced in the eastern, western, southern, and north western borderlands of Ethiopia. Some markets are also dominated by influential personalities and illegal exporters (Alemayehu, 2011). However, those factors generally affecting the marketing system should be evaluated and measured in order to identify and prioritize the intervention area in supporting the livestock marketing system. The market behavior, linkages between channels and traders, structure and performance efficiency in progress in Gera woreda is inadequate for designing policies and institutions. There are around four livestock market centers recognized by Gera woreda community. These places have no well-organized livestock marketing infrastructure to

offer basic watering, feeding, veterinary Clinic, Detention pens, tax collection office, Toilet and Loading rams facilities. The situation is worse in the woreda even it has no fencing to facilitate tax collection. The problem of means of transport for marketing of live Animals in Gera is very high and they traveled long-distance on foot to reach the market which causes shrinkage or the loss in weight. Livestock are transported better if tracks is comfortably filled. To minimize shrinkage of livestock transport should be by truck, to avoid rough handling, avoid overloading and under loading and proper bedding (TMD of annual report, 2015).To seal these gaps and develop a workable guide on marketing of beef cattle in Gera woreda, it is important to analyze the determinants of market participation and quantity supplied to the market, market structure, the conduct and performance of the market participants along producing and trading route and challenges and opportunities .This will ensure a complete understanding of this market with a possibility of suggesting policy recommendations aimed at empowering livestock keepers and other market participants to gain in the market framework.

To fulfill the above knowledge gap, this study attempted to answer the following research questions: -

1.3 Research questions

1. What are the existing beef cattle market structures, conduct and performance of study area look like?
2. What are the determinants of market participation and supply of beef cattle?
3. What are major internal and external factors in the beef cattle production and marketing?

1.4 Objectives of the study

The overall objective of the study is to analyze beef cattle marketing performance in the study area

The specific objectives are:

1. To analyze the structure, conduct and performance of beef cattle market
2. To analyze the determinants of market participation and quantity supplied of beef cattle in the study area
3. To identify the major internal and external factors in the beef cattle production and marketing of the study area.

1.5 Scope and Limitations of the study

The study focused on the market performance of the beef cattle marketing system in the Gera woreda, Jimma Zone. This study is cross-sectional type as the data used for the study was collected in a single period. The primary data were collected from sample beef cattle producers and traders surveyed through interview from the sample kebeles and market locations. The participants along the beef cattle marketing like large trader, licensed traders, etc. were very small and not easily accessible for interview these participants are only found on market days during selling beef or purchasing of beef cattle and are involuntary to have an interview they are also mobile from one market to another. Obtain reliable information about price and volumes sold or exchanged informally has been difficult.

1.6 Significance of the Study

The information generated from this study will support policy makers and other NGOs to make relevant decisions to intervene in the development of live animal marketing by providing necessary market facilities with their respective services, providing marketing information, construction of transportation infrastructure, and in designing of appropriate policies. The finding of this study will also be useful to beef cattle producers and traders to make their respective decisions about where and how to sell or to buy. Academically, the work also serves as a reference document for researchers and students to get on studies of the same or related kind of topics in the same zone as well as other parts of the country. Therefore, the study will serve as a reference for those who wish to carry out further studies in the area.

2 LITERATURE REVIEW

2.1 Basic Concepts

2.1.1 Market and Marketing

Market may be defined as “a particular group of people, an institution, and a mechanism for facilitating exchange. The concept of a market is any structure that allows buyers and sellers to

exchange any type of goods, services and information. The exchange of goods or services, with or without money, is a transaction. Market participants consist of all the buyers and sellers of a good who influence its price, has given rise to several theories and models concerning the basic market forces of supply and demand (Oxford Dictionaries,2014).Markets facilitate trade and enable the distribution and allocation of resources in a society. Markets allow any trade-able item to be evaluated and priced. Markets generally supplant gift economies and are often held in place through rules and customs, such as a booth fee, competitive pricing, and source of goods for sale (local produce or stock registration).

Marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large. In other word Marketing is the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods and services to create exchanges that satisfy individual and organizational objectives (keefe, 2008). Marketing research is the function that links the consumer, customer, and public to the marketer through information used to identify and define marketing opportunities and problems; generate, refine, and evaluate marketing actions; monitor marketing performance; and improve understanding of marketing as a process. Marketing research specifies the information required to address these issues, designs the method for collecting information, manages and implements the data collection process, analyzes the results, and communicates the findings and their implications (Malhotra, 2008).

2.1.2 Marketing Management

Marketing management is the organizational discipline which focuses on the practical application of marketing orientation, techniques and methods inside enterprises and organizations and on the management of a firm's marketing resources and activities. Globalization has led some firms to market beyond the borders of their home countries, making international marketing a part of those firms' marketing strategy (Kotabe and Helsen,2010). Marketing managers are often responsible for influencing the level, timing, and composition of customer demand. In part, this is because the role of a marketing manager can vary significantly

based on a business's size, corporate culture, and industry context. For example, in a large consumer products company, the marketing manager may act as the overall general manager of his or her assigned product (Kotler,2012). To create an effective, cost-efficient marketing management strategy, firms must possess a detailed, objective understanding of their own business and the market in which they operate (Wilson,2012). In analyzing these issues, the discipline of marketing management often overlaps with the related discipline of strategic planning.

2.1.3 Market analysis

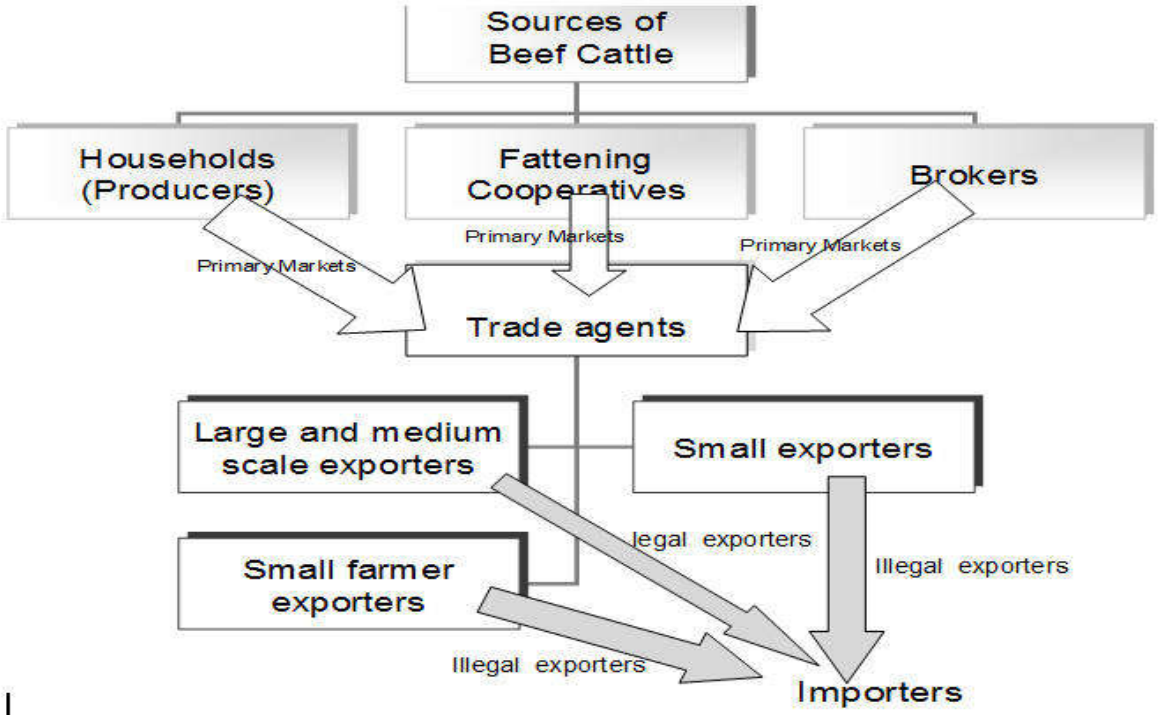
A market analysis studies the attractiveness and the dynamics of a special market within a special industry. It is part of the industry analysis and thus in turn of the global environmental analysis. Through these analyses the strengths, weaknesses, opportunities and threats (SWOT) of a company can be identified. Finally, with the help of a SWOT analysis, adequate business strategies of a company will be defined (FAO 2010). The market analysis is also known as a documented investigation of a market that is used to inform a firm's planning activities, particularly around decisions of inventory, purchase, work force expansion/contraction, facility expansion, purchases of capital equipment, promotional activities, and many other aspects of a company. The goal of a market analysis is to determine the attractiveness of a market, both now and in the future. Organizations evaluate the future attractiveness of a market by gaining an understanding of evolving opportunities and threats as they relate to that organization's own strengths and weaknesses. Organizations use the finding to guide the investment decisions they make to advance their success. The findings of a market analysis may motivate an organization to change various aspects of its investment strategy. Affected areas may include inventory levels, a work force expansion/contraction, facility expansion, purchases of capital equipment, and promotional activities.

2.1.4 Marketing Channels

Market channels are the alternative routes of product flow from producer to consumer. They are a series of operation, which physically bring goods (beef cattle) into the hands of the final consumer, but in some cases an intermediate market institutions may take ownership without physical handling of them (Assefa,2008). There are several marketing channels through which

products (like cattle) flow to final consumers in both the domestic and export markets. It may involve transportation, handling and storage, title transfers, processing, and distribution (Zewdie, 2014). The livestock marketing channel begin with the pastoralists that supply for both local and export market (Asfaw, *et al* 2011).

Figure1. Existing beef cattle sources and market channel of livestock trade in Ethiopia.



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urce: Alemayehu,2011

2.1.5. Marketing Performance

Performance refers the proficiency of individual, group, organization or system toward the purpose it stands. Performance assessment is the process of collecting analyzing and reporting the information regarding to the performance of an individual, group, organization or system. It is a class of appraisal that is based on judgment. Performance assessment also has long been used to judge proficiency in individual, group, organization or system (Chris,2001). According to Business dictionary (2013), performance of marketing system refers to the behavior of a marketing system and market center. The aspects of the performance of marketing system concern how accurately, effectively, rapidly and freely the marketing system make price; how

much goods and services are provided at a minimum average cost to the market; in what extent, the infrastructures and other marketing services and facilities were provided. The performance of marketing system is, therefore, better or efficient when the system occupied with improved market facilities, provided with necessary supporting services and well constricted infrastructures, and the system make price accurately and freely; otherwise the performance of the system considered to be poor (Belay,2009).

2.1.5.1 Performance Measures of Marketing

Performance generally is controlled by measuring factors such as profitability, sales, market share, shareholder value, employee productivity, and customer satisfaction. Although variables are analyzed, managers usually consider number of standards simultaneously that combine to provide an overall measure of performance. Even though the most common variables that are used to represent an organization's performance are quantitative (e.g., net profit, return on equity), many qualitative measures (e.g., customer satisfaction, attitude change toward the company or its products) are also considered in an overall assessment of performance. For example, a firm might consider the efficiency of its operation based on cost containment and contribution margins and the productivity of its personnel who make goods in the factory, sales people who call on the company's customers, or the rate of new product introduction in to the market. Qualitative factors that are more elusive, and hence more subjective, help management gain a better understanding of overall performance.

For example, customer satisfaction, product quality (as it is perceived by the customer), and return on investment in advertising can be combined with quantitative factors in measuring performance (Anderson and Vincze2000).

2.1.5.2 Marketing Efficiency

Marketing efficiency is an important commonly used measure of marketing performance. The question of whether a market is efficient, or not, where the inefficiencies lay, is crucial to market performance evaluation. If markets are, in fact, efficient, the market price is the best evaluator of value, and the process of assessment becomes one of justifying the market price. Unless the market price may be different from the true value, and the process of evaluation is focused

towards finding a sensible estimate of this value (Shenkute,2009). Market efficiency is a crucial issue for individual producer as well as public; because, the degree of efficiency attained affect producer price and profit, cost to the consumer, and there by their real income and the general resource utilization. Market efficiency is a crucial issue for individual producer as well as public; because, the degree of efficiency attained affect producer price and profit, cost to the consumer, and there by their real income and the general resource utilization (Aklilu,2004).

Marketing Costs: Marketing costs are the embodiment of barriers to access to market participation by resource poor smallholders. It refers to those costs, which are incurred to perform various marketing activities in the transportation of goods from producer to consumers. Marketing costs includes handling cost (labour, loading and unloading, costs of damage, transportation and etc) to reach an agreement, transferring the product, monitoring the agreement to see that its conditions are fulfilled, and enforcing the exchange agreement (Holloway and Elhui, 2002).

Marketing Margin: It is a commonly used measure of the performance of a marketing system (Abbot and Makeham,1981). It is defined as the difference between the price the consumer pays and the price that is obtained by producers, or as the price of a collection of marketing services, which is the outcome of the demand for and supply of such services (Cramers and Jensen,1982).

The size of market margins is largely dependent upon a combination of the quality and quantity of marketing services provided the cost of providing such services, and the efficiency with which they are undertaken and priced. For instance, a big margin may result in little or no profit or even a loss for the seller involved depending upon the marketing costs as well as on the selling and buying prices. Under competitive market conditions, the size of market margins would be the outcome of the supply and demand for marketing services, and they would be equal to the minimum costs of service provision plus “normal” profit. Therefore, analyzing market margins is an important means of assessing the efficiency of price formation in and transmission through the system. There are three methods generally used in estimating marketing margin: (1) detailed analyses of the accounts of trading firms at each stage of the marketing channel (time lag method); (2) computations of share of the consumer’s price obtained by producers and traders at

each stage of the marketing chain; and (3) concurrent method: comparison of prices at different levels of marketing over the same period of time (Mendoza, 1995).

2.2. Livestock Production System

Livestock are domesticated animals raised in an agricultural setting to produce commodities such as food, fiber, and labor. The term is often used to refer solely to those raised for food, and sometimes only farmed ruminants, such as cattle and goats. Livestock production continues to play a major economic and cultural role in numerous rural communities (Livestock Dictionary, 2015). Ethiopia's livestock production system is characterized by (a) pastoralism; (b) agro-pastoralism; (c) urban and per urban farming; and (d) specialized intensive farming systems (Ahmed, *et al* 2004). However, pastoralism and agro pastoralism are the dominant livestock production-based, land-use systems in the arid agro ecologies of Ethiopia and account for 50 per cent of the total 114 million livestock numbers, out of which 40 per cent are cattle, 52 per cent sheep, 56 per cent goats and 100 per cent camels (ACTESA, 2011).The traditional and pastoralism production systems in Ethiopia, respectively, utilize unfenced rangeland grasses as a major source of feed or grazing, with limited usage of crop residues.

These two systems have common approaches to livestock production techniques by employing low management levels using zero or minimum inputs, thereby continuously subjecting animals to communal grazing and risks of drought, disease, theft and predators. The natural resources such as land, water and forage/grass are communally shared and therefore, no one claims ownership and responsibility. A group of farmers have access to common grazing land and water their cattle at a central watering point. Cattle are walked long distances in search of good grazing and water, which are scarce most of the time, especially during the dry season. Beef cattle are cattle raised for meat production (as distinguished from dairy cattle, used for milk production). The meat of adult cattle is known as beef. There are three main stages in beef production: cow-calf operations, back grounding, and feedlot operations. When raised in a feedlot, cattle are known as feeder cattle. Many such feeder cattle are born in cow-calf operations specifically designed to produce beef calves. While the principal use of beef cattle is meat production, other uses include leather, and products used in shampoo and cosmetics. A steer that weighs 1,000 lb (450 kg) when alive will make a carcass weighing about 615 lb (280 kg), once the blood, head,

feet, skin, offal and guts have been removed. The carcass will then be hung in a cold room for between one and four weeks, during which time it loses some weight as water dries from the meat. When boned, and cut by a butcher or packing house this carcass would then make about 430 lb (200 kg) of beef (Williams, 2011).

There is little evidence of strategic production of livestock for marketing except some sales targeted to traditional Ethiopian festivals. The primary reason for selling livestock is to generate income to meet unforeseen expenses. Sales of live animals are taken as a last resort and large ruminants are generally sold when they are old, culled, or barren. In the highlands, large numbers of cattle are kept to supply draft power for crop production, whereas prestige and social security are the predominant factors in the lowland pastoral areas (Alemayehu,2011). There is no specialized production system specifically for beef production in Ethiopia. Beef is a by-product in the pastoral and mixed crop-livestock production system as cattle are primarily kept for milk and traction purposes, respectively. Cattle are usually sold when they are culled from dairy purpose, too old for draft purpose and usually in a poor body condition. Carcass weight of cattle slaughtered in local abattoirs in Ethiopia was comparable to cattle slaughtered in tropical part of Africa. However, the proportion of carcass with little/no fat was very high. Moreover, the proportion of inferior conformation and fat grades of cows and castrated bulls were relatively higher compared to other categories of cattle. The relatively better carcasses weight, conformation and fat grades in the wet season compared to the dry season indicates the opportunity to improve carcasses weight, conformation and fat grade through better feeding management (Mummed and Webb,2015).

2.3. Livestock Marketing Systems

In Ethiopia, the marketing process in general follows a three-step system with primary, intermediate and terminal markets through which marketable animal and animal products pass from producers to small traders and on to large traders and/or butchers. However, most producer's sale their stock and livestock products at local markets directly to consumers or small traders at relatively low prices. Without exception markets are open places in villages and towns. Distance from the market, poor trekking routes and lack of holding grounds create unfavorable conditions for producers forcing them to sell their stock at low prices. This means animals are

trekked for long distances, (for a period of 1-3 days) without adequate resting/shading, watering and feeding facilities along the supply chain. The trekked animals, therefore, are prone to predators; deaths of up to 5-10 per cent and 10-15 per cent sickness from stress; and 8-13 per cent body weight losses (ECFA ,2012).

Marketing of livestock is not determined based on their weight and quality, but by direct tiresome bargaining between buyers and sellers. Due to these unfavorable marketing systems and the discouraging price on the producers' side they are not encouraged to improve the quality and the off-take of their animals (Diress,2011). In Ethiopia, both legal and illegal livestock marketing systems are operating at different magnitudes. Small farmer exporters and traders are the major actors in the illegal cattle marketing system while medium- to large scales licensed exporters are dominantly operating in the legal system. Most cattle sales are related to farm households' cash needs and commercial orientation. The number of live beef cattle sales, from July 2010 to June 2011 fiscal year, to the neighboring countries of the Sudan and Somalia, and to Middle Eastern countries, according to SPS-LMM report, July 2011, was 472,041 head accounting to 70% of the USD 211.1 sale value of both live animal and meat export. This is almost a two-fold increase of the average export figure over the previous five years, which totaled to 1,242,729 head of animals (Animal and Plant Health,2012). The entire supply chain in Ethiopia is further characterized by numerous intermediaries /actors namely: brokers, collectors; agents; animal trekkers, small, medium and big traders; wholesalers; abattoirs; butcheries; exporters; local authority and Department of Veterinary Services.

The Ethiopian meat and live animal value chains have been developed over the years into a series of complex constituents involving various actors that include producers, collectors, small private and cooperative fatteners or feedlots of beef cattle, various (and in some places, numerous) middlemen, livestock trading cooperatives, individual traders and exporters (AGP, 2013). This makes the supply chain unnecessarily long with increased transaction costs and without significant value added activities (Asfaw, *et al* 2011). Livestock markets are generally under the control of local authorities. Livestock market locations in primary and secondary markets are typically not fenced; there are no permanent animal routes and no feed and watering

infrastructures. Yet buyers and sellers are subjected to various service charges by the local authority as well as other bodies (Solomon,2003).

Marketing of beef cattle is carried out at various levels of livestock markets, where pricing is mainly through negotiation and to some extent based on grading and weights normally based on visual estimation. The retailing of beef is mostly done through privately owned butcheries. The butchers face serious shortage of appropriate tools and equipment used in meat handling and cutting. Marketing information on beef, which include different marketing channels for beef and beef products, is limited. Domestic processing is considered to be insignificant. The domestic demand for quality beef is met by imported products, including premium beef cuts, sausage and canned beef. Still a big proportion of the local demand (estimated at more than 95%) is for warm "mixed beef" (UNIDO, 2012).

2.3.1 Live Animals and Meat Exports

In 2011 the volume of global meat exports was estimated at USD 105 billion, and Ethiopia accounted for less than one percent of this total (0.75 percent or USD 79 million), of which most is chilled sheep and goat carcasses. This ranked Ethiopia as the 43rd largest meat exporter. The many reasons for this include very low off-take rates; large numbers of animals that by-pass abattoirs and are exported live, producers who are not commercially oriented and sell only in need of cash or when draught animals get too old, and lack of certifications and acceptable international standards by meat processors. However, just over a decade ago, Ethiopia was exporting close to no meat at all, but since that time the country has built markets in several African and Middle Eastern countries famous such as, United Arab Emirates, Saudi Arabia, Angola, Egypt, and Bahrain. Even with this abundance of livestock and meat, Ethiopia still has one of the lowest per capita consumptions of red meat in Africa. There are several reasons for this low consumption, including low per capita incomes, high domestic meat prices and the fasting days by the Orthodox Christians which means that 43% of the population does not consume meat products for over 200 days per year. This reduces aggregate demand by 20-35%. Only neighboring Eritrea has a lower per capita consumption of meat than does Ethiopia (AGP, 2013).

2.4. Applications of Structure-Conduct-Performance Market Analysis

Structure-Conduct-Performance (S-C-P) is an analytical approach or framework used to study how the structure of the market and the behavior of sellers of different commodities and services affect the performance of markets, and consequently the welfare of the country:

• ***Market structure*** consists of three market characteristics: (1) the number of sellers, (2) the nature of the product, and (3) the ease of entry into or exit from the market.

Classifies market structure into four monopoly, oligopoly, monopolistic competition and perfect competition based on the combination and interrelationship of the above variables (USAID 2008)

1. **Monopoly:** when a single seller provides a single product that lacks any close substitute. In this case, the price determined by seller and the buyer purchase in such price as they have no other options.
2. **Oligopoly**: characterized by the presence of a few sellers for large number of buyers for a unique product. The part, which is a few in numbers, can influence the price.
3. **Monopolistic competition**: is a form of imperfect competition in which there are many sellers and buyers of differentiated product.
4. **Perfect competition**: characterized by large number of buyers for large number of sellers of homogeneous product. The price of such product is determined by demand-supply mechanism.

• **Market conduct** refers to the patterns of behavior that traders and other market participants adopt to affect or adjust to the markets in which they sell or buy. These include price setting behavior, and buying and selling practices. Conduct is the way in which buyers and farmers behave, both amongst themselves, and amongst each other (Banson, 2014).

• **Market performance** refers to the extent to which markets result in outcomes that are deemed good or preferred by society. Market performance refers to how well the market fulfills certain social and private objectives. These include price levels and price stability in the long and short term, profit levels, costs, efficiency and quantities and quality of food commodities sold. When this happens, there is full employment of resources which leads to a reduction in transaction cost which in turn a reduction in price. Price reduction leads to more money in consumers' pockets to spend which in turn helps farmers or companies' profitability margin. As such, rising consumer spending will further accelerate to national economic growth (Kizito, 2011).

Market concentration: refers to the number and relative size distribution of buyers/sellers in a market. It is generally believed that higher market concentration implies non-competitive behavior and thus inefficiency. The common measures of market concentration are concentration ratio, hirshman herfindahl index (HHI) and Gini-coefficient.

Concentration Ratio (CR): The concentration ratio is the numerical index widely used by industrial organizations for measuring the size of firms in market. Suggested that as rule of thumb, a four largest enterprises concentration ratio of 50% or more is an indication of a strongly oligopolistic industry, 33-50%, a weak oligopoly, and less than that, indicates un concentrated industry. The problem associated with this index is the arbitrary selection of the number of firms that are taken to calculate the ratio and the ratio does not indicate the size difference of the firms (Kohls and Uhl, 1985). Because of its wide application and simplicity, this study employed concentration ratio to determine the behavior the firms.

2.5 Empirical Studies on Beef Cattle Marketing Performance

Different scholars conducted research on agricultural commodities marketing by using market structure, conduct and performance, determinants of participation and quantity supplied to market and SWOT analysis. The result indicates that strengths, Weaknesses, Opportunities and Threats received by marketing participant and level of market efficiency varied with respect to location and size of marketing channel. In the Ethiopia, existing livestock marketing chains, the structure of the livestock market shows limited participation of market actors in the value addition process. This shows that beyond transporting and limited fattening operation, relatively few market services are usually observed in the process. Thus, there is a need for the private sector to consider investment in slaughtering and further processing of beef and shoat meet rather than focusing on a mare live animal export (Teklewold et al,2009).

The performance of a market is influenced by two major factors: the structural characteristics of the market and the competitive behavior of actors in the marketing chain. Understanding how these factors work independently and together can provide a basis for identifying opportunities to be exploited and constraints that need to be removed for enhancement of commercialization (Mafimisebi,2015). From existing data and research there is some knowledge on the number of

livestock; number of livestock markets, locations and concentrations; and the number of livestock being traded. Recent information on location specific marketing constraints, livestock sources, prices, margins, stock marketing routes and market information endowments are unknown. How prices and margin volatility are affected by other variables (e.g. season, climate variation, crop prices) is also unknown for any tier of the livestock marketing chain (Solomon, 2003).

A study by Ehui *et al*, (2009) on the factors affecting livestock market participation and sales in the mixed crop-livestock farming system of the highlands Amhara and Tigray regions of northern Ethiopia shows that ownership of different species of livestock, land holding, education, crop income and non-farm incomes are the main factors influencing market participation and sales. Negassa and Jabbar (2008) also found that household size and TLU of livestock ownership affected positively and significantly sales of livestock while landholding negatively affected supply. The major weaknesses of the traders involved in live animal and meat export are capital shortage, lack of experts as market agent mainly involved in periodical market assessment. Low level of education and gap on entrepreneurship skill are also another aspect of the weak points stifling the full run of the business. There are also fears that threatened the functioning of the business. It is very difficult to offset scarcity of capital with credit due to limited access to credit. In addition to this, it is almost customary that most of the transactions take place through credit terms where most complaining delays in repayment and in extreme cases defaulting of terms. Here, whenever repayments are not due in time, subsequent operations might be disturbed ending in to the malfunctioning of the livestock supply chains (Teklewold *et al*, 2009). Indicates different types of marketing cost and margin related to the transaction of beef cattle by producers, butchers, smaller traders, hotel and restaurant owners and larger traders. Producers in beef cattle value chain gets lower profit margin relative to other value chain actors.

Compared to producers, other actors (butchers, smaller traders, hotel and restaurant owners and larger traders) their profit margin is higher. That means by simply buying from the farmers and selling to consumers, other actors took 86% of the total profit margin which means butchers, smaller traders, hotel and restaurant owners and larger traders are responsible for 16%, 15%, 25% and 29%, respectively. While farmers, doing all the work of producing beef cattle and

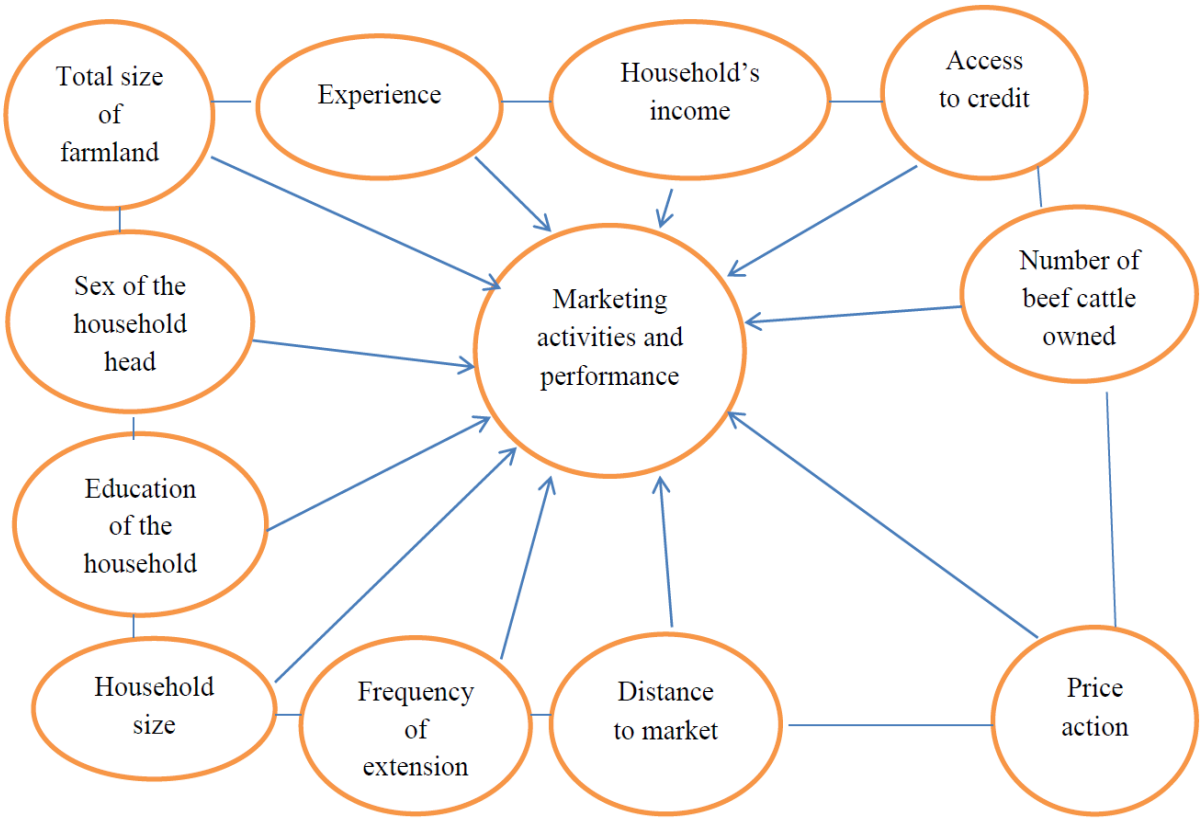
bearing the associated risks, took only 14% of the profit margin (Gesese and Legesse,2015). Regarding the market structure, cattle market is known to be dominated by few traders. Although the degree of competition varies, cattle market structure varies across cattle type marketed from loose oligopoly to strict oligopoly. This shows that only few traders share the majority of market share and earn abnormal profit. Besides, cattle market is characterized by entry barriers such as distant market point, high trucking cost, seasonality of marketing, information asymmetries and unfriendly relation between actors. Imperfect nature of the market in the district activated informal trade. As the pastoralists mainly depend on cattle for their livelihoods and other cultural values, traders take advantage of the asymmetric market information towards them. Although it varies with the type of cattle, the larger share of the market gains remains with end of traders thereby limiting the pastoralists a chance to realize the economic gains in cattle production (Bassa and Woldeamanuel,2015).

Based on the IFE and EFE matrices weighted score and the evaluation of internal and external factors, the position for beef cattle development lies at the position of grow and build. By analyzing all the factors from SWOT matrix four strategies were designed to determine the beef cattle development enterprise. The best strategy was selected by using qualitative strategic planning matrix (Sarma and Raha, 2015). A study by Prasititi, 2012 suggested alternative strategies for developing beef cattle agribusiness by adapting technology for high production, enhancing partnerships agribusiness in rearing, processing and marketing. However, various internal and external factors of live animal and meat marketing system in Ethiopia and it includes: absence of effective grading system, absence of market information system, absence of promotional activities, supply problems, prevalence of diseases, traditional production system, and illegal export trade, inadequacy of infrastructure, competition, repeated bans and inadequate port facilities.

2.6. Conceptual Framework Performance of Beef Cattle Marketing Indicators

A conceptual framework is an analytical tool with several variations and contexts. It is used to make conceptual distinctions and organize ideas. Strong conceptual frameworks capture something real and do this in a way that is easy to remember and apply. The use of the term conceptual framework crosses both scales (large and small theories). Conceptual frameworks are

particularly useful as organizing devices in empirical research (Ravitch,2016). According to (Kaplinksy and Morris 2001), conceptual frame of the beef cattle value addition is the task of all value chain functions from input supply and production to butchering, hotels and restaurants service, trade and consumption. To reduce unfair market and benefit share in the value chain, there is a need to identify major factors affecting the beef cattle market participation and quantity supply, constraints and opportunities to help small beef cattle producers and business to improve productivity and competitiveness of the value chain. With this ground, the schematic representation of the conceptual framework applied for this study is represented here after.

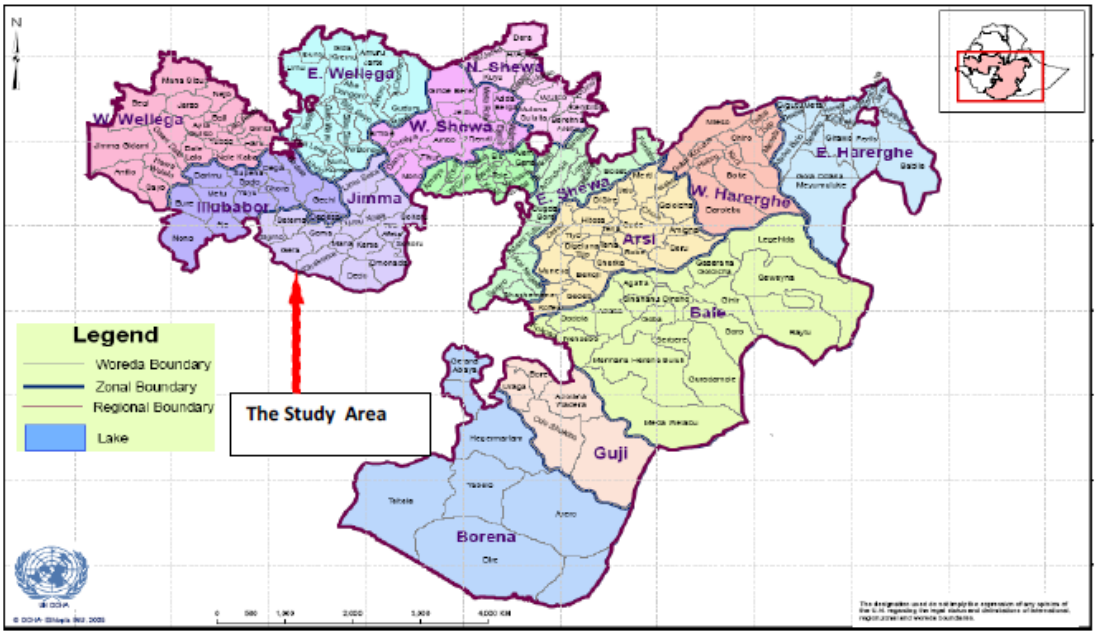


(Figure 2) Conceptual Frameworks

3 METHODOLOGY

3.1 Description of the Study Area

Figure 3. Oromia Regional State and the Study Area illustrated below in the map



Source: - Damtie Babur, 2009

The study was conducted at Gera woreda of Jimma zone, southwestern Ethiopia. The altitude of this woreda ranges from 1390 to 2980 meters above sea level; mountains include Waka,

Kimbibit and Timba. Perennial rivers include the Naso. A survey of the land in this woreda shows that 26.5% is arable or cultivable (23.4% was under annual crops), 7.0% pasture, 56.6% forest, and the remaining 9.9% is considered degraded, built-up or otherwise unusable. Coffee and spices are important cash crops (Socio-economic profile of the Jimma Zone 2006).

About 20.4% of the urban and 17.2% of the rural population has access to drinking water. Based on CSA (2017) population projection values of reported a total population for this woreda of 144,574 of whom 72,396 were men and 72,178 were women 7,659 of its population were urban dwellers. Most the inhabitants were Muslim, with 85.64% of the population reporting they observed this belief, while 11.9% of the population said they practiced Ethiopian Orthodox Christianity, and 2.36% were Protestant. The woreda has 100,949 Cows, 75,712 Oxen, 42,968 Heifers 32,809 Bulls 66,309 Sheep, 18,722 Goats, 36,944 Horse, 8,520 Mules, 2,340 Donkey, 55,622 Poultry, 4,380. The average number of fattened live animals per years in Gera were 38032 of which 13986, 16083 and 7963 cattle, sheep and goat respectively. Modern hives, 10,958 Transitional hives and 30, 7280 Traditional hives. and iron deposits are known in the woreda, but have not yet been exploited. There are 27 Farmers Associations with 10,545 members and 16 Farmers Service Cooperatives with the same number of members. Gera has 41 kilometers of dry-weather and 50 of all-weather road, for an average road density of 62.7 kilometers per 1,000 square kilometers. In Gera woreda, permanent market place namely dusta function one day per week gives services at Thursday. Farmers prefer selling for Addis Ababa trader (large traders) due to higher prices. In general, the method of price setting is done by eye ball estimation, however, some buyers and traders estimate prices by traditional methods of body condition estimation. By touching the back of the animal by their palm and estimate size of animal’s muscle.

3.2 Sources and Methods of Data Collection

The study is based on both primary and secondary data. The primary data were collected from sample beef cattle market participants such as, producers and intermediaries namely: - traders, butcheries shop owners and brokers by using quantitative and qualitative data. Separated questionnaires were designed for sample farmers and traders. The questionnaires were pretested before the actual data collection practices. In addition to the questionnaire, an informal survey in

the form of market visit and discussions were being to acquire additional supporting information. In addition to primary data, secondary data were collected from Jimma zone Gera woreda Trade and Market Development office and Livestock and fish Development office and Gera revenue authority.

3.3 Sampling Size and Sampling Method

The sample size was determined using proportionate sampling method (Yamane, 1967) and using the following formula as Equation (1).

$$\boldsymbol{n} = \frac{N}{1 + N(e)2} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where: *n* is the sample size; *N* is the population size and *e* is the level of precision as being provided by Yemane (1967) to determine the required sample size at 95% confident level and 90% level of precision.

$$\boldsymbol{n} = \frac{3380}{1 + 3380(0.1)2} = 97\ Producers \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

For this study, to select a representative, sample a multi-stage sampling technique were implemented to select beef cattle’s producer kebeles and beef cattle market participants. In the first stage, Gera woreda was selected purposively because it has a high potential for beef cattle production compared to other worded. In the second stage, four sample kebeles were selected out of the 30 kebeles in the woreda purposively based on their potential of market participation and market supply of beef cattle. In the third stage, sample households were selected randomly with probability proportional to size from sample kebeles. Sample for other market participants such as traders (Small traders buy from producers and large traders buy from producers and from small traders), butchers and brokers were also selected.

Table 1: Number of population and sample from each sample kebele

Numbers	Kebeles (n=4)	Number of producers (N=3380)	Sample households (n=97)
1	Gabba-Koro	1060	30

2	Gadda-Gute	1020	29
3	Kombolcha	800	22
4	Dusta	500	14
Total		**3380**	**97**

In addition, data from intermediaries were being also collected. The sites for the trader and broker's surveys were at Dusta market in which a good sample of beef cattle traders existed but data for butcheries shop owners have been collected from Chira, the capital of the Gera woreda. Therefore, from 30 large traders, 21 have been selected randomly, while from 7 small traders, 4 have been selected randomly. In addition, 2 butcheries and 2 brokers have been selected purposively more experienced for this study. Finally, from generated list of beef cattle marketing participants 126 respondents were taken based on proportion to size.

3.4. Method of Data Analysis

The sample data collected were organized, coded and entered in to SPSS version 20 and exported to STATA software package version 13 and analyzed by descriptive statistics, analysis of structure conduct and performance, econometric analysis and SWOT analyses, respectively.

3.4.1 Descriptive statistics

This method of data analysis refers to the used of ratios, percentages, means, and standard deviations in the process of analyzing the data collect for this study. During the data analysis that allocated arrangement with analyze the determinants of beef cattle market participation and number of beef cattle supplied to the market, analyze the existing market structure, conduct, and measuring market performance on the beef cattle marketing system and challenges and opportunities in the beef cattle producing and marketing

3.4.2 Analysis of structure conduct and performance (S-C-P)

The structure-conduct-performance approach was used to analyze beef cattle market performance in terms of marketing cost and profitability of participants along the major marketing channels. The net marketing margin of each producer and trader in the Dusta main

market was calculated as the total gross marketing margin (TGM) is always related to the final price or the price paid by the end consumer and is expressed as a percentage:

$$\mathbf{TGM} = \frac{Pc - Pp}{Pc} \times 100 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Where TGM =Total gross marketing margin

P_c=Final consumer price, and

P_p= Producer price.

It should be emphasized that producers that act as middlemen also receive an additional marketing margin. The producer's margin is calculated as a difference:

$$\mathbf{GMp} = \frac{Pc - TGM}{Pc} \times 100 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Where = GM_p Gross marketing margin of the producer.

The net marketing margin (NM) is the percentage over the final price earned by the intermediary as his net income once his marketing costs are deducted.

$$\mathbf{NM} = \frac{TGM - MC}{Pc} \times 100 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Where MC =Marketing costs

Higher NMM or profit of the marketing intermediaries reflects reduced downward and unfair income distribution, which reduces market participation of producers. An efficient marketing system is where the net margin is near to normal or reasonable profit.

3.4.3 Econometric analysis

The first stage of the Heckman two-stage model a 'participation equation' attempts to capture factors affecting participation decision. This equation is used to construct a selectivity term known as the 'inverse Mills ratio' (which is added to the second stage 'outcome' equation' that explains factors affecting number of beef cattle supply. The second stage involves including the Mills ratio to the beef cattle supply equation and estimating the equation using Ordinary Least Square (OLS). Specification of the Heckman two-step procedure, which is written in terms of the probability of decisions are involved, such as participation and number of beef cattle supply to market is**:**

The participation Equation/the binary probit equation

$Y_i = x_i\beta_i + U_i \quad i=1, 2, 3\ldots n$----------6

Where; Y_i is, a dummy variable indicating the market participation that is $Y_i=1$, if $Y_i > 0$,

Otherwise $Y_i=0$, β_i 's is unknown parameters to be estimated; X_i are variables determining participation and U_i is the random error term. Second, the selection model parameters were consistently estimated by using OLS over n observations for Y_i by including an estimate of the inverse Mill"s Ratio, denoting λi, as an additional regress in the equation below.

The observation equation/the supply equation

$$Z_i=\beta_o+ \beta_i\ x_i+\mu_i+\varepsilon_i \quad i=1,2,3...n\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 7$$

Where Z_i: is the volume of supply by sample households

Xi: are the explanatory variables determining quantity supplied

β_i: is unknown parameter to be estimated in the quantity supplied function

$\beta_{o:}$ is an intercept term

μ: is a parameter that shows the impact of participation on the quantity supply and

ε: is an error term.

3.4.4. SWOT Analyses

SWOT analysis technique was used to indicate the current constraints and future possibilities of the beef cattle marketing performance in study area:

1. Designed: external and internal factors matrix.
2. Give prioritized weights: Weight is assigned to each factor. The value of each weight should be between 0 and 10 scale is used. Zero means the factor is not important, while one or ten means the factor is the most influential and critical. However, the total value of all weights put together should equal 1 or 10.
3. Rate factors: Rating is assigned to each factor, and is between 1 and 4. Rating captures whether the factor represents a main strength (rating = 4), a slight strength (rating = 3), a main weakness (rating = 1), a slight weakness (rating = 2), a main opportunity (rating =4) and a slight opportunity (rating =3) and a main threat (rating = 1), a slight threat (rating = 2).

4. Multiply weights by ratings: Multiply each factor weight with its rating to calculate its weighted score (Rank =weights* ratings).
5. Total all weighted scores: Add all the weighted scores of each factor, to calculate the sector's total weighted score.

3.5. Hypothesis, Variable Selection and Definition

During identifying factors influencing beef cattle marketing channels, the main task is to analyze which determinants of market participation of beef cattle marketing factor influences and the direction of the relationship these factors are related with the dependent variables. Therefore, potential variables, which are supposed to influence beef cattle, market participation and quantity of beef cattle supply, need to be explained and identify the challenges and opportunities of beef cattle marketing. Accordingly, the major variables expected to have influence on both the participation decision and quantity supply are explained as follows:

Dependent variables

Participation in beef cattle market (MPBC): It is a dummy dependent variable that measures sample households‟ participation in beef cattle market. It takes a value of 1, if a given household head participates in beef cattle market 0, otherwise.

Amount of beef cattle Sales (ABCS): It is a continuous dependent variable in the second step of the Heckman selection equation it is measured in TLU and represents the actual supply by beef cattle producers to the market in the survey year.

Independent variables

Sex of the household head (SEXHH): it is a dummy variable taking 0 if female and 1 if male. In mixed farming system, both men and women take part in livestock management. Generally, women contribute more labour input in areas of feeding, cleaning of barns, milking, butter and cheese making and sale of milk and other products. However, obstacles, such as lack of capital and access to institutional credit, competing use of time, and access to extension service, may affect women's participation and efficiency in beef cattle production (Pais *et al*,2000). Therefore,

it is not possible to tell a priori about the likely sign of the coefficient of sex, in market participation and sales volume.

Extension service (EXTSRV): It is a dummy variable and assigned with 1 for those households who frequently receive extension service and 0, otherwise.

It is expected that extension service widens the household's knowledge with regards to the used of improved technologies. Therefore, contact with extension agent is assumed to have positive relationship with market participation decision.

Access to credit (ACRED): This is a dummy variable and measured with 1 for those farmers who take credit for the production and marketing of beef cattle and 0, otherwise. Access to credit would enhance the financial capacity of the farmers to purchase the necessary inputs for the production and marketing of beef cattle. Therefore, it is hypothesized that credit use for cattle fatting and marketing would have positive influence on market participation and volume of beef cattle supplied.

Veterinary service (VETSERV): This variable is a dummy variable indicating veterinary service households are getting to secure their beef cattle from different animal diseases. Obviously, if households get access to veterinary service their market participation and the probability of supplying beef cattle will be high (Aklilu, 2010), in his study on an analysis of benefits of pastoralists wealth group and policy implications, argues that in terms of clear policy support, different countries currently take very different positions on community-based animal health workers. Following these arguments, this variable is hypothesized to influence participation in beef cattle market and supply positively

Level of Education (HHEDU) It is a continuous variable and refers to a number of years of formal schooling the household head attended. Those household heads who have formal education determines the readiness to accept new ideas and innovations, and hence promote to get supply, demand and price information and this enhances farmers' willingness to participate and increase volume of sale. Therefore, level of education was hypothesized to positively influence amount of beef cattle sales.

Household family size (HHFSZ): Family size is a continuous variable measured in terms of more house holder members (Peek and Wilcox,1991). It is included in the model as a variable explaining variation in market participation. Families with more household members tend to have more labour. Production in general and marketable surplus is a function of labour. Thus, family size is expecting to have positive impact on performance of beef cattle marketing but larger family size requires larger amounts for consumption and negatively influence beef cattle supply by reducing marketable surplus.

Body condition of beef cattle that household owned (CATBC): This variable is a dummy variable with value 1 if the beef cattle owned by the household have a good beef body condition and 0, otherwise. As Solomon argued in his research, due to lack of weighing facilities, mostly cattle transaction is done „based on evaluation and assessing the body conditions, which tend to be highly subjective (Tilahun and Adugna,2004). It is therefore, hypothesized that good beef body condition/appearance of beef cattle was expected to influence market participation and supply of beef cattle positively.

Public Holiday (HODFCPMP): It is a dummy variable and assigned with 1 for those households who said it increase in the price at holiday for beef cattle and 0, otherwise. Although trends for the past couple of years have shown a dramatic increase in food prices, especially during the holidays, the current nature of the market in Gera seems relatively stable. Although prices are expected to show an increment near to the eve of the Ethiopian holiday market prices for holiday commodities, such as beef cattle, sheep goat, chicken, butter and eggs, have stayed incredibly still. As it was hypothesized Public holiday the effect of the average price for beef cattle determining market participation by producers was found to be positive and significant.

Household's income (HHINC): This variable, on-farm income plus off-farm income, is measured as a continuous variable. If household has high or adequate income to purchase feed and residue. The income earned can be used to purchase inputs and hence improvement the production of beef cattle. This has been suggested in the study conducted in Southern Malawi by (Anderson, 1992). Producers who have adequate income to purchase inputs can easily participate in markets supply more beef cattle than those not having the money. Hence, it was hypothesized to affect the performance of beef cattle marketing positively.

Household access to market information (AMISSBBC): It is a dummy variable and assigned with 1 for those households who access marketing information and 0, otherwise. Farmers marketing decisions are based on market price, supply and demand information, and poorly integrated markets may convey inaccurate and inadequate information on price, demand and supply, leading to inefficient production and marketing decisions. Therefore, it is hypothesized that market information is negatively related to market participation and marketable surplus.

Distance to market (DISMKT): It is a continuous variable measured in walking time (minute) which producers spend to reach the nearest market. If the producer is in a distant place from the market, access to market is considered as poor. If closer to the market, the lesser would be transportation cost and time spent. According to (Wolday,1994.) poor market access has significant and negative effect on quantity of agricultural food product supply. So, it is hypothesized that distance to market is negatively related with the market participation and supply of beef cattle.

Number of beef cattle owned (NBCOWN):-It is a continuous variable measured in terms of TLU owned by sample households. It is expected that the TLU of cattle owned by a household could have a significant impact on the level of supply of beef cattle and market participation. It is assumed that household with larger number of beef cattle have better income and financial position to purchase sufficient amount inputs (Kinde,2007). It is therefore, hypothesized that it influences market participation and supply of beef cattle positively.

Total size of farmland owned (LANDSIZE): Total size of land owned by the household, is a continuous variable measured in hectares and taken as an explanatory variable to influence performance of beef cattle marketing. According to study conducted by (Pankomera *et al*, 2009) the production factor land was found to play a major role where more than 50% of the food consumed originates from own food production. The more land owned the more could be the feed for the beef cattle so the probability of market participation and supply of beef cattle is high. Thus, this variable will expect to influence performance of beef cattle marketing positively.

Experience (EXP): This is a continuous variable that is measured by the number of years of experience sample households have in beef cattle supply and market participation. The

experience that the farmer accumulates are believed to be wise in resource use, on the other hand young household heads have long investment horizon and It was expected to influence market participation and supply of beef cattle positively.

Table 2: Summary of variable descriptions, measurements and expected signs

S. No.	Variables used in the model	Description	Type	Variable definition and measurements	Expected sign
1	SEXHH	Sex of the household head	Dummy	Male=1, female=0	-/+
2	EXTSRV	Extension service	Dummy	0-no and 1-yes	+
3	ACRED	Access to credit	Dummy	Access =1unless =0	+
4	VETSERV	Veterinary service	Dummy	Access =1unless =0	+
5	HHEDU	Level of Education	Continuous	Grade in classes	+
6	HHFSZ	Household family size	Continuous	Number	+
7	CATBC	Body condition of beef cattle that household owned	Dummy	Good =1, unless=0	-/+
8	HODFCPMP	Public Holiday	Dummy	0-no and 1-yes	+
9	HHINC	Household's income	Continuous	Amount of income in birr	+
10	AMISSBBC	Household access to market information	Dummy	0=No 1=Yes	+
11	DISMKT	Distance to market	Continuous	Minute	-
12	NBCOWN	Number of beef cattle owned	Continuous	Tropical livestock unit	+
13	LANDSIZE	Total size of farmland owned	Continuous	Hectare	+
14	EXP	Experience	Continuous	Number of years	+

4 RESULTS AND DISCUSON

4.1 Descriptive Results

4.1.1 Demographic and socioeconomic characteristics of the respondents

Since producers are the primary unit of analysis, there is a need to understand the basic characteristics of the sample producer household heads in the beef cattle marketing performance. Household characteristics (age, sex, household size and education) and other variables including marital status and religion which are believed to influence decision making are described as follows.

Table 3. Demographic and socioeconomic characteristics of producers

Variables	Characteristics	Producers		Traders	
		N	%	N	%
Sex	M	91	93.8	25	100
	F	6	6.2	-	-
	Total	97	100	25	25
Education level	Illiterates (Grade =0)	64	66	-	-
	Primary (Grade=1-8)	30	30.9	-	-
	Secondary (Grade=9-12)	2	2.1	-	-
	College (Grade= >12)	1	1	-	-
	Total	97	100		
Religion (Followers)	Muslim	72	74.2	16	64
	Orthodox	15	15.5	4	16
	Protestant	10	10.3	5	20
	Total	97	100	25	100
Marital status	Sigle	6	6.2	21	84
	Married	91	93.8	4	16
	Total	97	100	25	100

Producers are the primary unit of analysis, there is a need to understand the basic characteristics of the sample producer household heads in the beef cattle market. Out of the total sample households (97 respondents), 93.8% were male headed and the remaining 6.2 were female headed respectively. 74.2 % of the sample households are followers of Muslim the remaining 15.5 % and 10.3% are followers of Orthodox Christianity and Protestant Christianity, respectively. 66% of the respondents were illiterate,30.9% in years attend 1-8 grade, 2.1%, 9-12 grade completed and Only 1% above 12 grade completed. Most the respondents (97.94 %) were involved in any other than the beef cattle fattening. Regarding their marital status, about 93.8% (i.e. 91 sample producers) and 6.2% out of the total households were married, single respectively.

Table 4. Demographic and socioeconomic characteristics of traders, butchers and brokers

Variables	Obs	Mean	Std. Dev.	Min	Max
Traders					
Age	25	34.16	5.719	20	45
Education level	25	6	.678	0	12
Family size	25	4.67	1.653	1	7
Butchers					
Age	2	41	7.071	36	46
Education level	2	5	1.414	4	6
Family size	2	4	0	4	4
Brokers					
Age	2	37	1.414	36	38
Education level	2	5	1.414	4	6
Family size	2	7	1.414	6	8

Traders: traders in this study are those purchasing the beef cattle from producer. There were two types of traders, which are small/local traders (merchants) and larger traders. Small traders are those buy from beef cattle producers and trading only it district. Large traders buy from producers and from small traders it can afford to loading beef cattle on truck and they often sell to other larger traders out of the district and Addis Ababa Market.

A total of 25 beef cattle traders were licensed traders. The average age of the respondents of trader was 34.16 year with minimum and maximum age of 20 and 45 years, respectively.64 % of the sample traders are followers of Muslim the remaining 16% and 20% are followers of Orthodox Christianity and Protestant Christianity, respectively. The average education level of sample traders 6 with 0(illiterates) and 12 years of minimum and maximum, respectively. Regarding their marital status, about 84 % sample traders and 16% out of the total traders were married, single respectively. The result shown that, the average family size of the total sample trades in persons was 4.67%, with 1 and 7 being the minimum and the maximum respectively.

Butchers: are those who purchase fattened beef cattle from producers or small traders to slaughter and provide the beef for hotel and restaurant owners and consumers. The average age of the butchers was found to be 41 years with a minimum and maximum age of 36 and 46 years, respectively. Moreover, the average household size of the sample butchers is 4 with a maximum of 4 and minimum of 4 household members. Their average education level was 5 years with a minimum of 4 and maximum of 6 years of education.

Brokers play an important role in linking producers to market and other stakeholders of the commodity chain while the ability of market accession of producers is limited and market demand requires an improvement in quantity amount as well as diversity of products type. The brokers sometimes go beyond facilitation of transaction and tend to control and fix prices, create price balance and make extra benefits from the process in addition to considering the producers to sale their beef cattle at the prices set by traders. Average age of the brokers is found to be 37 with a maximum and minimum age of 36 and 38 years, respectively. Moreover, the average education level of sample brokers 5 with 4 and 6 years of minimum and maximum, respectively. Their average family size was 7 with a minimum and maximum household size of 6 and 8 persons, respectively. The broker charge during the survey time was 100 Birr (ETB) per head of cattle marketed (50ETB from buyer and 50 ETB from seller). So, the brokers share that amount whatever their number is. Their interference is great in the transactions of the beef cattle sold. The pricing of the beef cattle is based on body condition and eye-ball estimation.

Table 5: Summary statistics of the beef cattle producer's .

Variable	Description of the independent	Obs	Mean	Std. Dev.	Min	Max

	variables					
DISMKT	Distance to market	97	100.619	48.230	10	240
SEXHH	Sex of household head	97	.938	.242	0	1
HHEDU	Education	97	4	.589	0	12
HHFSZ	Number of family size	97	7.42	3.436	1	18
LANDSIZE	Size of farmland owned	97	2.3	1.989	0.25	11
EXP	Fatting experience	97	6.598	3.312	2	20
HHINC	Source of income	97	11681.39	9502.365	6000	70000
NBCOWN	Beef cattle owned	97	18.206	10.951	3	68
AMISSBBC	Market information	97	.814	.391	0	1
VETSER	Veterinary service	97	.876	.331	0	1
ACRED	Access to credit	97	.753	.434	0	1
EXTSRV	Extension service	97	.495	.503	0	1
BCBCT	Body condition	97	.381	.488	0	1
HODFCPMP	Holidays determine	97	.619	.488	0	1

The average age of the overall sample heads of households was 44.21 year with minimum and maximum age of 25 and 64 years, respectively. The result revealed that, the average family size of the total sample households in persons was 7.42 % with 1 and 18 being the minimum and the maximum, respectively.

Based on survey result of this study, average land owned by the producers was found to be 5.3 hectare with a maximum and minimum of 11 and 0.25 hectares, respectively. This result is higher than value reported by Shenkute (2009), in which the average land holding per household was 1.93 ha were reported in Goma district of Jimma zone, western Ethiopia.

A large number of farmers were involved in cattle fattening in the study area. The average number of beef cattle owned mean18 with a maximum and minimum of 68 and 3 beef cattle respectively. The beef cattle per household in this study was also higher than in East Java, Indonesia More than 90% of beef cattle production was derived from smallholder cattle operations, often with only 2-3 cattle per household (Priyanti *et al*,2012).

Traditional cattle fattening for beef production have become an important business venture of most producers in the study area. This may be due to the location of the district as it has suitable

climate appropriate planting materials, low labor costs and which provide the producers market opportunity. Fattening cattle mainly constitute draught oxen as they are usually used for draught work at least for about one year before fattening commences. Fattening of draught oxen using locally available feed resources is a long tradition for the producers in the study area. Beef cattle fattening experience refers to the number of years that the producer stayed in cattle fattening activity. From producers' survey, it was found out that most of the producers had been in cattle fattening activities for more than 2 years. Out of the 88 surveyed producers with some maximum and mean beef cattle fatting experiences of 20 and 7 years, respectively. Similar study was reported by (Abebe and Urge, 2014) most of the farmers (50%) in high land areas had long years of fattening experience (greater than 10 years), but only 24.3 % and 22.5 % 0f the farmers had greater than 10 years of fattening experience in midland and lowland areas, respectively. Evidence obtained from the present study revealed that most of the farmers (>75%) had long experience of fattening, greater than five years.

4.1.2. Frequency of Fattening Per Year, Suitable Season and Type of Cattle Prefer For Fatting

Producers in the study area fattened cattle using traditional practices the frequency of fattening per year it was observed that the length of fattening period varies according to the type of fattening system and type of cattle prefer for fattening purpose. Table 6 shows that the majority (60.23%)of the respondents practice fattening twice per year. According to Demisse (2016) this study was also different in highland, majority of the farmers fatten cattle once within a year (60%), while it was three times per year for mid-altitude (42.5%) and two times per year for lowland (70%) agro-ecologies. According to the survey conducted for this study most of the producers (53.41%) fatten their animals from January-March and 38.64%, 6.82%, 1.14% fatten their animals from October to December, July-September, and April to June, respectively. This study was also different from Abebe and Urge, (2014) reported most of the farmers (49.3%) fatten their animals from July to September and 28.6%, 16.4%, 5.7% fatten their animals from October to December, April to June, and January to March, respectively.

Table6: Frequency of fattening per year, suitable season and type of cattle prefer for fatting

Items	Variables	Freq.	Percent
Frequency of fattening per year	Once	9	10.23
	Twice	53	60.23
	Thrice	26	29.55
Preferable months to start	July–September	6	6.82
cattle fattening.	October-December	34	38.64
	January-March	47	53.41
	April-June	1	1.14
Type of cattle prefer for	Old oxen	17	19.32
fattening purpose	Matured oxen	52	59.09
	Young bull	14	15.91
	Females	5	5.7
Main reason for fatting beef cattle	Source of cash income	88	100

In general, the suitable season of fattening time did not occur at the same time with season of feed availability indicating need to produce forage crops on the available marginal lands to supplement during feed shortage in order to target season of peak cattle market price. Source of fattening cattle which were mostly purchased from the market producer's type of prefers cattle for fattening purpose the response of the majority of the interviewed producers indicated that about, 59.09 %, 19.32% 15.91% and 4.55 matured oxen, old oxen, young bull and females respectively. This study result almost the same arguments to reported by (Fikru,2015) the majority (52%) of the farmers prefer to fatten steer than bulls. According to results of this study, the main reason for fatting beef cattle for selling an animal is to meet an acute need of money, in general about 100% (88 respondents) of the respondents fatting beef cattle for source of cash income.

4.2.Taxes collected from cattle trade

Government revenue collected from the sale of cattle with an average of 2, 79,720 Birr per year the revenue collected from these sales has increased in 2011-2016, revenue from the average sale of 13986 numbers of cattle.

However, by comparing the revenue collected to the amount of beef cattle produced, the amount of revenue collected was lower than would be expected from the amount of beef cattle that was produced (Table 7) this revenue is still collected at the road side. The Gera trade and market development office (2015) reported that about 10508 numbers of beef cattle were supply to market pass with Pass –Permit. It is best way to prevent contraband that has been illegally animals trade.

Table7. Revenue collected from the cattle sales (ETB)

Year	Number of animal supply to market	Revenue collected from the cattle sales(ETB)
2011	8866	177320
2012	7269	145380
2013	10135	202700
2014	14361	287220
2015	22061	441220
2016	21226	424520
Total	83918	1678360

Source: -Gera woreda Revenue Authority 2016

4.3. Structure, Conduct and Performance of Beef Cattle Markets

4.3.1. Market Structure

Market structure of beef cattle in the study area is as characteristics of the producers and trader of a market which seem to influence strategically the nature of competition and pricing behavior within the market. In the study area, imperfect competition is a type of market structure showing some but not all features of competitive markets. Forms of imperfect competition include monopolistic competition: is a form of imperfect competition in which there are many sellers and buyers of differentiated product and their concentration ratio as indicated below 40%.

4.3.2 Market Concentration

One commonly used concentration ratios the four-firm concentration ratio, or C4, consists of the market share of the four largest firms as a percentage of the total volume of goods or services mobilized in the total industry. The higher the concentration ratio, the greater the market power

of the leading firms. In this study, beef cattle market concentration ratio calculated by taking the annually purchased volume by market participants. The survey result shows the existence of monopolistic competition market structure in Dusta beef cattle market having with concentration. This is to mean the top four produces and traders are controlling 16% and 32% of the beef cattle market respectively. Market concentration ratio is, therefore, traditionally measured as

Table 8: Market concentration within and comparison producers and trades.

Number of producers	Amount of beef cattle Sales per year	Market share (%)	Number of trades	Amount of beef cattle Sales per year	Market Share (%)
Producer A	68	4	Trader A	1200	11
Producer B	55	3	Trader B	864	8
Producer C	50	3	Trader C	788	7
Producer D	49	3	Trader D	686	6
Producer E	33	2	Trader E	680	6
Producer F	30	2	Trader F	650	6
All other Producers	1356	83	All other Traders	5700	54
Total	1641	100		10568	100

Note: Top four beef cattle producer's and trader's sales per year

A= 1st market share B=2nd market share C=3rd market share

D=4th market share E=5th market share F=6th market share

Based on the result, the four-producers and the five-producer concentration ratios, C4 and C5, in producers, respectively, are:

C4=4+3+3+3=16% C5=16+2=18%

These concentration ratios in beef cattle produces indicate a low degree of concentration. In the market four producers control 16% of the total beef cattle sold in the market. The opposite situation can be captured by computing the concentration ratios in beef cattle traders'. The first four- and five-firm ratios are:

C4=11+8+7+6=32% C5=32+6=38%

The four- and the five-producer concentration ratios for beef cattle producers indicate a low degree of concentration and thus more competition than the beef cattle traders. Almost all market structure of cattle in the area shows the non-competitive nature. The market concentration ratio for top four cattle trader is ranged between 43.03 and 95.02 (Bassa and Woldeamanuel ,2015).

4.3.3. Market Conduct

In this study conduct of beef cattle market is analyzed in terms of the producers' price setting, purchasing and selling strategies. The result indicated that almost 100% of the sample respondents agreed that the purchasing price of beef cattle is entirely dependent on demand and supply of beef cattle in the market day. All sample respondents also confirm that the purchasing price of beef cattle cannot be clearly identified until the final transaction took place. The selling price of beef cattle is set by a combination of buyers, negotiation and demand and supply balance of beef cattle's in the market day. When result looked at the marketing behavior of producers, it was bringing into being that body condition of beef cattle owned 2.1 % of poor, 35.1 % of average and 53.6 % of good supplied to the market. Highest prevalence of fasciolosis was observed in poor body condition cattle (85.9%) followed by medium (55.1%) and good body condition cattle (34.5%), respectively were reported in Jimma Town, Ethiopia (Demssie *et al* 2012).

The finding of the research indicated that the demand of beef cattle increase at the time of public holidays such as New Year, Mesekele, charismas, Easter and Arafahin particular mostly the price of beef cattle high that among market participant 1 %, 15.5%, 9.3 %, 51.5%, and 13.4% of producer respectively. As the survey indicated that there were significant fluctuations of price across the months of the year in sales of beef cattle. The highest beef cattle sales overlapped with the major social and religious celebrity days of the year. These are Ethiopian new year (September), Ethiopian Christmas (January), Ethiopian Epiphany (January), Ethiopian Easter (April) and Muslims Arafa. The periods of low beef cattle sales occur at the pre-Easter fasting period which lasts about two months, from February through March.

The domestic market is also affected by fasting and feasting, both Muslim and Orthodox Christian. In the Orthodox calendar, there are 207 days of fasting per year, where many

Orthodox Christians fast from all animal products. The main fasting period (Lent) lasts for 55 days before Easter, which usually occurs in April and occasionally in May. During this period, the demand for meat in Addis Ababa decreases significantly and many butcheries close. A significant portion of the Orthodox population also fasts every Wednesday and Friday throughout the year. During Christian holidays—particularly Christmas (January 7th) and Easter—the better-off households slaughter a sheep, while other households slaughter a chicken or group together with other households to jointly purchase one sheep or goat. The Addis Ababa market is also affected by the Muslim calendar, peaking during holidays (Ramadan, Eid al-Fitr and others) as described above (Farmer, 2010).

4.3.4. Performance of Beef Cattle Market

Market performance refers the result of the ultimate relation of market structure and conduct. The competition condition and pricing are the components of market structure and conduct that considerably affects market performance conditioned with the overall marketing environment including policy setting and economic conditions. In the study area, different beef cattle marketing channels (Figure3) were identified through discussions with key informants from producers and traders. The major channels identified were:

1. Producers- Consumers
2. Producers - Butchers/Restaurants/Hotels-Consumers
3. Producers - Small/Medium Traders- Restaurants/Hotels-Consumers
4. Producers -Small/Medium Traders- Larger Traders-Restaurants/Hotels –Consumers
5. Producers - Small/Medium Traders - Larger Traders -Export Market
6. Producers - Larger Traders-Export Market
7. Producers - Larger Traders- Abattoir-Export Market

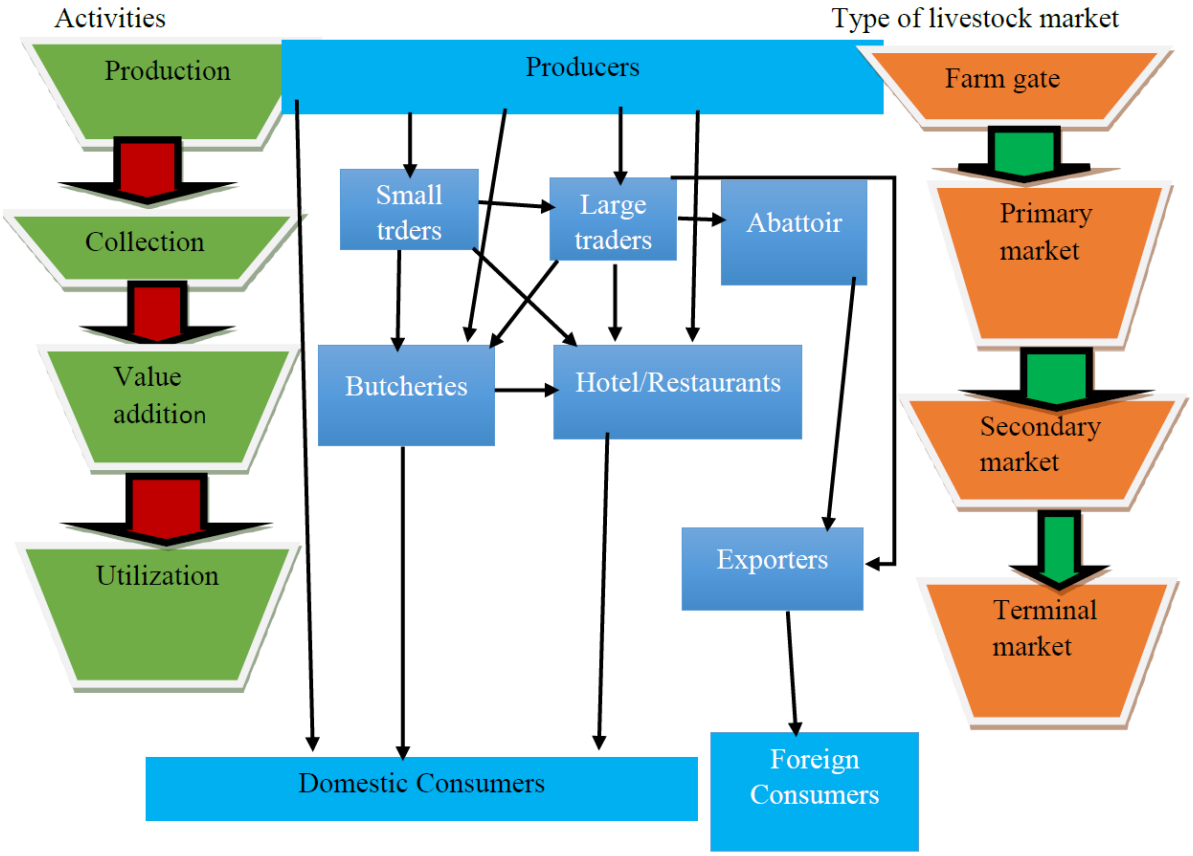


Figure 4. Marketing Channel of beef cattle in Gera woreda

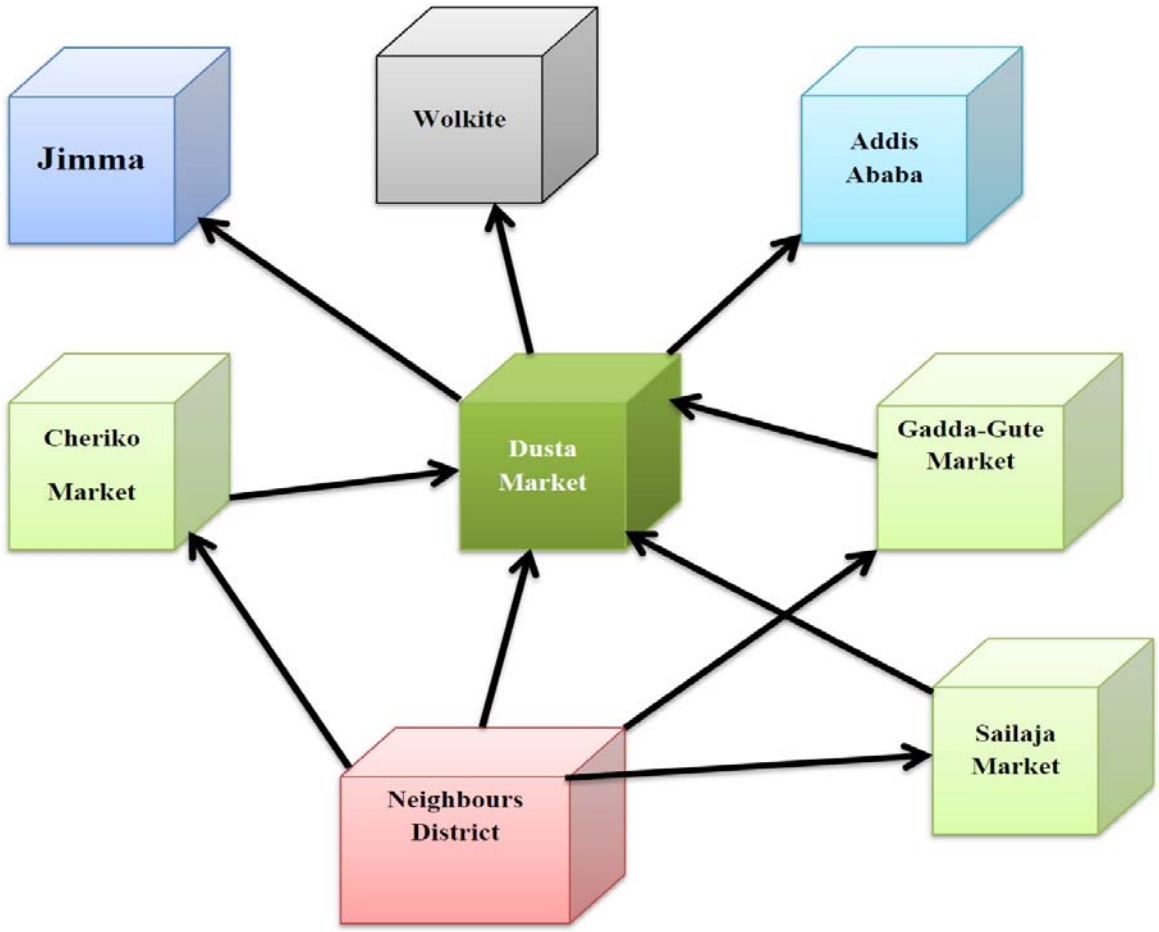


Figure 5 beef cattle marketing routes in Gera woreda

Regarding the marketing route, there is one main beef cattle marketing route in the study area it starts from Dustat market. Trade routes are complex and difficult to categorize, but it is estimated that 20 % ,16% and 64% of the beef cattle sold in Jimma town, Wolkite and Addis Ababa, respectively where there is relatively better demand and higher prices. However, according to key informants the volume of beef cattle transported through this route varies across times of year mainly increased by sustainable of development therefore when high beef cattle sold by high price the producer's income also increased. The primary livestock export from Ethiopia to Sudan is male cattle originating in Amhara Region. In 2007, it is estimated that 100,000 head of cattle were exported through this route, using both formal and informal channels (Farmer, 2010).

4.3.5. Marketing Cost and margins analysis

All marketing costs and margins can be shown as a percentage share of the reference beef cattle price, as a result shows the farmer's and traders share of the reference beef cattle price. A marketing margin is the percentage of the final weighted average selling price taken by each stage of the marketing chain. The margin must cover the costs involved in transferring produce from one stage to the next and provide a reasonable return to those doing the marketing. Table 9 indicates different types of marketing cost and margin related to the transaction of beef cattle this means share of net marketing margin of producers and traders 38.2% and 15.2 %, respectively. Producers in beef cattle market gets high share of net marketing margin relative to other market actors. Compared to producers, other trades their share of net marketing margin is low.

Table 9: Marketing costs and margin shares of produces and traders.

Cost / Birr per beef cattle

Items	Producers	Trades
Purchasing price	5,528.98	8,240.00
Labour cost	302.50	42.5
Feed cost	93.28	87.64
Material cost	65.67	41.4
Transport cost	4.54	300
Tax	20	40
Broker fee	50	150
Veterinary cost	75.53	-
Other cost	187.5	237.99
Total Production / marketing cost	799.02	899.52
Total cost	**6328**	**9,139.53**
Sale Prices	**10237.5**	**10777.92**
Gross Margin (Selling Price - Purchase Price)	4708.52	2537.92
% share of market margin ($P_c - P_p / Pc$) *100	45.99	23.55
Net margin (Gross Margin - Total Production / Marketing cost)	3909.5	1638.4
% share of net marketing margin (Total Revenue – Total Expenses)/Total Revenue*100	38.2	15.2

4.4. Results of Econometric Models

This sub-section focuses on the empirical results of the models. The models were estimated to identify determinants of producer‟ participation in beef cattle marketing and to affect amount of beef cattle supply to markets significantly. Variance Inflation Factor is important to check multicollinearity problem before running the model for both the dummy as well as the continuous variables.

Table 10: Multicollinearity test results

Explanatory variables of market participation			Explanatory variables for amount supplied		
Variable	VIF	1/VIF	Variable	VIF	1/VIF
ACRED	1.91	0.524136	ACRED	2.03	0.492336
DISMKT	1.53	0.655638	DISMKT	1.84	0.543434
NBCOWN	1.43	0.701702	NBCOWN	1.36	0.736861
SEXHH	1.36	0.734008	HHFSZ	1.35	0.739114
HHEDU	1.34	0.743912	HHEDU	1.30	0.770208
AMISSBBC	1.33	0.751952	VETSER	1.26	0.792832
HHFSZ	1.32	0.758113	LANDSIZE	1.22	0.817371
VETSER	1.26	0.793741	BCBCT	1.22	0.818447
LANDSIZE	1.20	0.830620	AMISSBBC	1.21	0.827417
EXP	1.19	0.840898	EXP	1.21	0.828068
HODFCPMP	1.17	0.855108	HHINC	1.16	0.863649
BCBCT	1.16	0.859447	HODFCPMP	1.16	0.864125
HHINC	1.13	0.882270	SEXHH	1.15	0.872762
EXTSRV	1.08	0.925931	EXTSRV	1.11	0.904288
Mean VIF	1.32		Mean VIF	1.33	

The usual measure of multicollinearity among dummy and continuous variables is Variance Inflation Factor (VIF) as a result the values of variance inflation factor of the dummy and continuous variables were in the Mean VIF of 1.32 and 1.33. As a result, depending on the results of variance inflation factor multicollinearity was not a serious problem among the result has shown that there dummy and continuous variables (table 10). Accordingly, factors influencing on producers‟ decision to participate in beef cattle marketing and total sales volume were discussed as follows. Here, the likelihood function is significant (Wald $\chi 2= 236.62$ with $P<0.0000$) showing strong explanatory powers. The Inverse Mills ratio (λ), which is a correction factor for selectivity bias, was not significant as well as insignificant ($P<0.871$) showing that there were no unobserved factors that might affect the selection (participation) equation as well as the beef cattle supplied to market equation.

The adjusted standard error for the market participation equation regression is given by sigma=4.62 and the correlation coefficient between the unobservable that determine selection into quantity of beef cattle supplied to market and the unobservable that determine the market participation is given by rho= -0.15. The estimated selection coefficient lambda = sigma×rho = 4.62×-0.15= -0.69.

4.4.1. Determinants of beef cattle market participation decision

In the first stage of Heckman sample selection model, the Probit maximum likelihood estimation method was used to identify factors affecting the market participation decision of households. A number of variables were hypothesized to affect the market participation decision of households. Results of the Probit model showed that out of the 14 explanatory variables that were entered to the model, five of them, namely access to market information, access to veterinary service, access to credit service, public holiday and level of education were found to significantly affect producers' decision to sell beef cattle. The results of the Probit model are showed in Table 11.

Household access to market information (AMISSBBC): as it was hypothesized market information access of the household was found to be significant at 5% decision of market participation. A respondent with more access to beef cattle market information have a better chance of marketing his surplus product and higher value of sale. The result reveals that those farmers with better market information are in a better position to supply their surplus production to the market beef cattle their probability of participation in markets increases by a number of 12 %. The more market information a household has, the lower its transaction cost will be, increasing market participation (Makhura,2001).

Access to veterinary service (VETSER): It is a variable that was hypothesized to affect participation of the sample producer in beef cattle markets positively. As the sample producers start receiving veterinary service for beef cattle their probability of participation in markets increases by a number of 12.8% which is significant at 1% probability level. The results suggest that getting veterinary service by experts has a significant marginal effect on increasing the probability of having access to the market participation (Embaye,2015).

Table 11: Probit model result

PBCM	Coef.	Robust Std. Err.	z	P>z	Marginal effects dy/dx
DISMKT	-.0015313	.0058458	-0.26	0.793	-.0000985
SEXHH	.6307141	.8953183	0.70	0.481	.0405579
HHEDU	.2810195	.3765308	0.75	0.055	.0180709*
HHFSZ	.090328	.1218833	0.74	0.459	.0058085
LANDSIZE	-.0613996	.1336602	-0.46	0.646	-.0039483
EXP	.044673	.0569598	0.78	0.433	.0028727
HHINC	-.0000222	.0000166	-1.34	0.181	-1.42e-06
NBCOWN	.0043652	.0330979	0.13	0.895	.0002807
AMISSBBC	1.873555	.776455	2.41	0.016	.1204784**
VETSER	1.992783	.7013855	2.84	0.004	.1281453***
ACRED	2.038403	1.00424	2.03	0.042	.1310789**
EXTSRV	.866854	.5743457	1.51	0.131	.0557428
BCBCT	.2149902	.658831	0.33	0.744	.0138249
HODFCPMP	1.130605	.6381322	1.77	0.076	.0727032*
Number of obs = 97 Censored obs=9 Uncensored obs=88					
Wald chi2(14) =236.62 Prob > chi2= 0.0000					

Note: ***, ** and * means significant at 1%, 5% and 10% probability levels respectively.

Access to credit service (ACRED): Access to credit service is a dummy variable found to affect the probability of participation in beef cattle markets positively and significantly at 5% probability level. As a result, having access to credit service in beef cattle production increases the probability of participation of producers in beef cattle markets by 13 %. Access to credit can be extremely vital for households to be able to develop their households and move out of poverty, there is however always some preconditions that financial institutions want debtor to fulfill (Ellertsson,2012).

Public holiday (HODFCPMP): Especially during holiday the effect of the average price for beef cattle determining market participation by producers was found to be positive and significant. These are Ethiopian new year (September 11), Ethiopian Christmas (January 5), Ethiopian Epiphany (January 19), Ethiopian Easter (April) and the Muslim Arefah. A unit increase in the price for beef cattle increases the probability of market participant in beef cattle by 7.3 %, which is significant at 10% probability level all other factors held constant. This is consistent with a priori expectations and the economic theory that price induces increased supply. Similar results were worked by (Ayalew et al, 2013) All market actors and key informants indicated that cattle price generally rise during Christmas, Easter, Eid Al-Adha, Eid Al-Fetir and the Ethiopian New year. Variation in cattle price across months was due to coffee harvesting (45.6% of the respondents), fasting and holidays (36.1%) and lack of transport network 12.8%).

Level of Education (HHEDU): As expected, education of household head had been associated positively with farmer's probability to participate in beef cattle market and statistically significant at 10% level of significance. As the sample household head; education status increases by one, the probability of participating in the beef cattle market increases by 1.8 %, all other factors held constant.

4.4.2. Determinants of amount of beef cattle supplied to the markets

In the second stage of the Heckman model estimation, determinants of total sales amount of the participant producers were identified. Ordinary least square estimation hence leads to both biased and inconsistent estimates of the parameters. This implies covariates that condition the amount of beef cattle sold operate conditional on the probability to participate in beef cattle markets as a seller. Summarizes, seven of the explanatory variables have significantly explained the quantity supply of beef cattle to markets. These variables are household income, household family size, land size owned, number of beef cattle owned, distance to market, public holiday and access to credit service.

Distance to market: as unexpected influences market quantity supply, positively and statistically significant at less than 5 % significance level. Distance from the local beef cattle markets is found to affect the quantity supply of beef cattle to markets positively as it is not hypothesized. As a result, decrease of one minute on market distance to which the beef cattle are supplied increases total number of the beef cattle supply to markets by an amount of 0.029 TLU. According to Gebremedhin *et al*, (2015) an increase of 2 hours of walking distance to nearest livestock market decreases the probability of net selling by 7.1%, strengthening the result of the bivariate probit.

Household family size (HHFSZ): Family size of a respondent is a continuous variable measured in terms of number of family members in the household. As beef cattle fattening is labour intensive activity, beef cattle produce in general and market supply of fattened in particular is a function of labour. As a result, household size family increases to influence positively the amount of beef cattle supply to the market by 0.33 TLU at 5% level of significance. Large family size of the dairy household has a positive effect on the probability of dairy household milk market participation decision (Somano,2008).

Total size of farmland owned (LANDSIZE): It affects beef cattle market supply positively and significantly at 10% significance level. This refers to the total area of land that a farm household owned in hectares. In agriculture, land is one of the major factors of production.

The availability of land enables the owner to earn more agricultural output which in turn increases the marketable supply. Therefore, land holding and marketable supply are predictable to have direct relationship. Thus, the result implied that, as farmer's land holding increased by a hectare, beef cattle supplied to market increased by 0.41TLU. The more land owned the more could be the feed for the beef cattle so the probability of market participation and supply of beef cattle is high. According to study conducted by (Mengist And Dawit,2012) the total land holding of the household test results indicate that there is a positive contribution to supply cattle to the market as more land owned per household level increases at 10% probability level or significance level in their ownership**.**

Table 12: OLS result of the Heckman two stage model determinants of amount of beef cattle supplied to the markets.

ABCS	Coef.	Std. Err.	z	P>z
DISMKT	.0297044**	.014092	2.11	0.035
SEXHH	-2.374548	2.934589	-0.81	0.418
HHEDU	.4963703	.9524539	0.52	0.602
HHFSZ	.3347233**	.1631092	2.05	0.040
LANDSIZE	.4147434*	.2479172	1.67	0.094
EXP	-.1031103	.1589019	-0.65	0.516
HHINC	.0088524*	.0000536	1.65	0.099
NBCOWN	.6866606***	.0522845	13.13	0.000
AMISSBBC	.9941021	1.660622	0.60	0.549
VETSER	-2.84209	2.53368	-1.12	0.262
ACRED	4.945289**	2.007469	2.46	0.014
EXTSRV	.8785654	1.050127	0.84	0.403
BCBCT	1.246877	1.113341	1.12	0.263
HODFCPMP	3.120768***	1.195124	2.61	0.009
_cons	-9.85064*	5.949746	-1.66	0.098
Mills lambda	-.675581	4.163368	-0.16	0.871
Rho	-0.14612			
Sigma	4.623363			

Note: ***, ** and * means significant at 1%, 5% and 10% probability levels respectively.

Household income: Household income which consists of both farm and off-farm income has positive and significant impact on quantity supply of beef cattle to markets. Therefore, addition of one more birr on income of beef cattle producers increases the quantity supply of beef cattle to markets by an amount of 0.009 TLU at 10% level of probability. Financial sources of households, both farm and non-farm income, positively and significantly influence market participation decision of households (Girma and Abebaw,2012). Household income has influence on the quantity of transaction but not on market participation of decision, income has

positive (negative) effect on the quantity of bought and vice-verse for the quantity of sold (Bellemare and Barrett, 2006).

Number of beef cattle owned (NBCOWN): - Herd size had a positive significant effect with a unit increase in herd size increasing the probability of selling beef cattle by 0.69 TLU, at 1% probability level in their ownership all other factors held constant. Households with larger beef cattle herds have a market supplied at their disposal and can readily sell their stock. According to (Mengist and Dawit,2012) variable test result indicates that there is a significant positive contribution to supply cattle to the market as more cattle owned per household level increases at 1% probability level or significance level in their ownership. In other words, as the number of cattle owned per household increases by one the amount of cattle supplied to the market will increase by 21%. This indicates that there is high correlation between cattle ownership and cattle supply to the market.

Access to credit service (ACRED): As expected prior, credit access had been positively and statistically significant at 5% level of significance. This indicates that as credit access increases by a unit, increases the quantity of beef cattle supplied to the market by 4.9 TLU, all other factors held constant. Since the households get credit for the purchase of inputs which are required for the fattening of beef cattle; thereby quantity of beef cattle supplied to the market will increase against increased production.

Public holiday (HODFCPMP): As expected holiday, positively and statistically significant at 1% level of significance. Holiday season beef cattle price on an upward trend with more beef cattle supply to market, it's an ideal opportunity for producers to take advantage of high prices. An increase of beef cattle price by one holiday increases the probability the quantity of beef cattle supplied to market by 3 TLU, all other factors held constant. As beef cattle production, has increased and demand remains exceptionally strong, better prices will be passed on to consumers.

4.5. SWOT analysis

In data collection processing, the analysis of Strengths, Weaknesses, Opportunities and Threats of beef cattle marketing in Gera district community were conducted based on the results combination of group discussion and interview. The results were showed as follows.

4.5.1 Internal Factor Evaluation Matrix (IFE Matrix)

IFE matrix is a strategic management tool used for evaluation of strengths and weaknesses for internal factors affecting the development of beef cattle in study areas. From Table 13, the highest weight score is 7.2 which implies that factors that are effective high land owned. These are important internal factors which are effective to develop the beef cattle in study area to support the community. The result also shows that the sum of total weight score is 44.1. Therefore, it can be concluded that the strategy of developing beef cattle in Gera woreda has been effective in using the strength and minimizing weakness factors which had contributed to negative impact. The result of this study highly different based on the model research on policy design for the beef cattle development (Achmad,2013) IFE matrix is being used to determine the weight value for strength and weakness for internal factors affecting the development of beef cattle in South Sulawesi the highest weight score is 0.666, which implies that factors that are effective are innovation, technology, maintenance and facilities. The result also shows that the sum of total weight score is 2.603.

Table 13 Internal Factor Evaluations

Strength		Value of weights (0-10)	Rating (1-4)	Rank
S_1	High land owned	1.8	4	7.2
S_2	Planting of forage on established watershed areas	1.4	4	5.6
S_3	High interest beef cattle fatting	1.3	4	5.2
S_4	Had indigenous knowledge animal healthcare	1.2	4	4.8
S_5	Identified beef cattle price increasing period	1.1	4	4.4
S_6	Had more experiences in cattle fatting	0.88	1	0.88
S_7	Had large number of labour force	0.82	1	0.82
S_8	large number cattle owned	0.8	1	0.8
S_9	Beginning of communication and information exchange	0.7	1	0.7
Total Strength				**30.4**
Weakness				
W_1	Inadequate access to market facility	2.26	1	2.26
W_2	Poor linkage with concerned body	1	2	2
W_3	Existing market participants illegal intermediate	1	2	2
W_4	Absence to responsible for supplementary feed (Unavailability of agro- industrial by-product such as molasses, cereal milling by- product and oilseed meals)	1.88	1	1.88
W_5	Poor grazing land management	0.88	2	1.76
W_6	Insufficient best practice transfer from one to another person	0.82	2	1.64
W_7	Separation of the government office in production & marketing activities	1.14	1	1.14
W_8	Inadequate scientific fattening know-hows	1.02	1	1.02
	Total Weaknesses			**13.7**
	Total			**44.1**

Table 14 External factor evaluations.

	Opportunities	Value of weights (0-10)	Rating (1-4)	Rank
O_1	It has suitable climate appropriate planting materials, low labor costs	1.86	4	7.44
O_2	Increased interest and capacity local consumption	1.6	4	6.4
O_3	Raw meat is strongly rooted in Ethiopian culture	1.39	4	5.56
O_4	Beginning of government improved livestock sector	1.3	4	5.2
O_5	Existing of livestock expert in each kebeles	1.1	4	4.4
O_6	Existing of FTC for learning institutions	0.9	3	2.7
O_7	Better coordinate policy	0.74	3	2.22
O_8	Involvement of the youth enterprises	0.7	3	2.1
O_9	Sustainable development	0.41	3	1.23
	Total opportunity			**37.25**
	Threats			
T_1	Unpredictable weather that affects beef cattle status	1.38	1	1.38
T_2	Fluctuating beef cattle prices and unstable	1.36	1	1.36
T_3	Tax problem (multiple and high taxation; payment for unsold animal)	1.3	1	1.3
T_4	Reducing grazing land for other purpose	1.2	1	1.2
T_5	Increase in cattle prices and feed prices	1.1	1	1.1
T_6	Sometime arise parasites and zoometric disease	1	1	
T_7	Turnover (unwillingness) of expert properly provided extension service to farmers due to low salary or none incentive	0.65	2	1.3
T_8	Broker fee and inappropriate interfering	0.66	2	1.32
T_9	Refused of credit due to borrowing subject to interest charges is not allowed from a religious	0.57	2	1.14
T_{10}	High transportation cost (Illegal charge for cattle marketing)	0.78	2	1.56
	Total Threat			**11.66**
	Total			**48.91**

4.5.2 External Factor Evaluation Matrix (EFE Matrix)

EFE matrix is used the weighting scoring system to identify the value opportunity weight and threat for beef cattle producers in study area. Based on external evaluation matrix the results (Table 14) showed that the total score for the opportunity factor is 37.25 and the threat is 11.6 and total score 48.91 indicate beef cattle marketing has a significant opportunity while minimizing threat in the study area.

In the study area, which is not like (Sarma and Raha,2015) based on external evaluation matrix the results showed that the total score for the opportunity factor is 1.725 and the threat is 0.713 and total score 2.438 indicate beef cattle agribusiness has a significant opportunity while minimizing threat.

4.5.3 Internal External Matrix (IE Matrix)

Based on the evaluation of internal factors (IFE) and external factors (EFE) of the beef cattle marketing, the following results were obtained: final score of internal factors evaluation matrix (IFE): 44.1 final score of external factors evaluation matrix (EFE): 48.91 which indicates great opportunities to formulate the effective strategies for exploiting their strengths and minimize the weaknesses respectively. This study result also is not similar reported by (Sarma,2014) on Agribusiness development approach of beef cattle based on the evaluation of internal factors (IFE) and external factors (EFE) of the agribusiness, the results were obtained final score of internal factors evaluation matrix (IFE) 2.610 and final score of external factors evaluation matrix (EFE) 2.438.

5 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY

This study is aimed at analyzing beef cattle marketing performance in Gera district. Specific objectives of the study are to analyze the structure, conduct and performance of beef cattle market, analyze the determinants of market participation and quantity supplied of beef cattle and assess challenges and opportunities in the beef cattle producing and marketing of the study area. Both primary and secondary data sources were used to analyze the beef cattle marketing performance. The analysis is made using descriptive statistics, analysis of structure conduct and performance econometric model using STATA 13 software and SWOT analyses.

Most the respondents (97.94 %) were involved in any other than the beef cattle fattening. Based on survey result of this study, average land owned by the producers was found to be 5.4 hectare with a maximum and minimum of 11 and 2 hectares, respectively. The average number of beef cattle owned 18 with a maximum and minimum of 68 and 3 beef cattle with year, respectively. From producers' survey, it was found out that most of the producers had been in cattle fattening activities for more than 2 years. Out of the 88 surveyed producers with some maximum and mean beef cattle fatting experiences of 20 and 7 years, respectively. This study shows that the majority (60.23%)of the respondents practice fattening twice per year. According to the survey conducted for this study most of the producers (53.41%) fatten their animals from January-March and 38.64%, 6.82%, 1.14% fatten their animals from October to December, July-September, and April to June, respectively.

In the study area, imperfect competition is a type of market structure showing some but not all features of competitive markets a form of imperfect competition in which there are many sellers and buyers of differentiated product and their concentration ratio as indicated below 40%.The finding of the research indicated that the demand of beef cattle increase at the time of public holidays such as New Year, Mesekele, charismas, Easter and Arafahin particular mostly the price of beef cattle high that among market participant 1 %, 15.5%, 9.3 %, 51.5%, and 13.4% of producer respectively.

As a result, the values of variance inflation factor of the dummy and continuous variables were in the Mean VIF of 1.32 and 1.33. As a result, depending on the results of variance inflation factor multicollinearity was not a serious problem among the result has shown that there dummy and continuous variables (table 10). Accordingly, factors influencing on producer's decision to participate in beef cattle marketing and total sales volume. The likelihood function is significant (Wald $\chi 2$= 236.62 with P<0.0000) showing strong explanatory powers.

Based on the evaluation of internal factors (IFE) and external factors (EFE) of the beef cattle marketing, the following results were obtained: final score of internal factors evaluation matrix (IFE): 44.1final score of external factors evaluation matrix (EFE): 48.91 which indicates great opportunities to formulate the effective strategies for exploiting their strengths and minimize the weaknesses respectively.

5.2 CONCLUSION

In conclusion, beef cattle marketing in the study area follows different channels the last channels one dominate market. Its having various market participants (like producers, large traders, small traders, butchers, hotel and consumers) and different volume of beef cattle traded. Most of the markets in the woreda have a monopolistic market structure with a higher market concentration ratio by trades. As a result, producers get high share of net marketing margin relative to traders. Therefore, the existing competition state and the pricing conditions which are the components of market structure and market conduct indicates seller and buyer with negotiation to determine market price transactions done based on „eyeball" estimation, therefore, participants estimate the price of beef cattle by looking physical condition of cattle visually and by touching different body parts of cattle by hand.

Result of the Heckman two stage sample selection model indicate that beef cattle marketing performances significantly influenced by independent variables such as access to credit, access to veterinary service, access to market information, Public holiday, household family size, household income, number of beef cattle owned, size of land, distance to nearest livestock market and level of education. These variables are having a positive impact on the probability of selling cattle and the number of cattle sold.

Farmers cattle fattening source of cash recently gained prominence as an important agribusiness sector of agriculture in the study area, and played role in creation of self-employment opportunities and supply of beef cattle to the market. Even though, the farmers in study areas are well experienced in utilizing seasonally available feeds obtained from crop cultivation and other pasture lands. The major internal and external factors in the beef cattle production and marketing of the study area inadequate access to market facility, poor nutritive value of available feed, its limited availability and poor grazing land management and absence to responsible for supplementary feed for fattened cattle are the most challenges faced the sectors.

5.3 RECOMMENDATION

1. The impact of access to credit on the beef cattle supply should give special attention not willing(refusing) to take credit due to religion influence must be considered in future intervention and creation of awareness encouraging processing activities to take credit and government bodies should also create enough financial support to the producers in the form of credit to run the beef cattle business appropriately with simple collateral requiring.
2. Strengthening efficient and area specific access to veterinary service, So, control of informal, illegal and expired animal drugs entrance in to the district by responsible agents or experts should be in place. Supporting livestock service providers by giving continuous capacity building trainings and separating livestock service providers work from other administrative activities increases beef cattle supply to the market.
3. In the study area to establish the requirements of market facilities with their respective services is one of the main asset in the area development of beef cattle particularly and livestock marketing in general. The government to provide market facilities with some of facilities like loading ramps, veterinary inspection posts, feed and water troughs, holding area in Dusta market location of the woreda.
4. In the study area absence to responsible for supplementary feed providers all key informant and 88 beef cattle providers to market were interviewed and the findings showed that all of them were there’s no any responsible for supplementary feed. Government agencies and NGOs are also involved in providing supplementary feed such as Agro industrial by-products. Whereas most supplementary feed could provide fattening animals with good body condition, specifically like the Gera woreda livestock and fisher office to facilities for solve

this problem. The areas that need the intervention to attention should be given to establish necessary supplementary feed (agro- industrial by-product) providers.

5. The finding of this study will also be useful to beef cattle producers and traders to make their respective decisions about where and how to sell or to buy there should be strong and clear relationship or vertical linkage between or among the main chain actors. beef cattle producers should focus on market oriented short cycle fattening by using proper feeding and management practices to ensure better economic return and continuity in the supply of beef cattle in the market to meet the increase rapidly demand for such high-quality animal products.
6. Government to improve the inadequate scientific fattening know-how's by supporting of farmers with providing training and using best practice transferring methodology.
7. Finally, all the problems indicated above, in one way or another related with or could be addressed through collaborative and deliberate action of both the producers and government. So, from the producer's side, high commitment for fatting should accepted the advised of expert for successful. From the government side, creation of encouraging policy with best design for more profits to be their community.

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APPENDIX

APPENDIX 1 Photographs Fatted Cattle

APPENDIX 2

1. PRODUCER

1. Information

1. Name of Enumerator_____ 2.Dateof interview_____
2. Zone _____4. District_____5. Name of the kebele_____

6. Distance to the nearest market _____ km,_____ walking minutes_____

2. General Characteristics of the Respondents

1. Name of the respondents _____
2. Gender of the respondents: - a. Males b. Female
3. Age of the respondents' _____
4. Religion of the respondents: - a. Muslim b. Orthodox c. protestant d. others_____
5. Marital status of the respondents: -a. Single b. Married
6. Education level of the respondents _____
7. What is the family size and composition: -A. Male _____ B. Female_____ Total _____?
8. How many hectares of total land you owned? _____
9. Are you involved in beef cattle fatting business? a. Yes b. No
10. How many years have you been in cattle fattening? _____years
11. If you own beef cattle, what is your main reason for fatting beef cattle?

a. Source of cash income b. Socio-cultural value c. Consumption/food d. Others _____

12. If source of cash income how much is it per season of fatting in birr? _____birr

13. What is the source of your fattening cattle?

a. Purchase from market b. Form own herd c. From other_____

14. Do you have any source of income other than the beef cattle fattening? a. Yes b. no

15. If yes, how much is your income per /year in birr? _____ Birr

16. What is the number of the beef cattle you own? _____

17. What are the types of the cattle and their relative numbers?

a. Ox_____ b. Cow _____ c. Bull _____ d. Heifer_____ e. Calve _____

18. How many beef cattle fattening you had over the past 5 years changed?

a.2004E.C_____b.2005E.C_____ c.2006E.C_____d.2007E.C_____ e.2008E.C_____
Reasons for this change (increased/ decreased)?
_____

19. Where you purchase the average number of your beef cattle per marketed for fattening?
a.Dusta _____b. Cheriko _____c.Gadda-Gute_____d. Sailaja_____e.Other_____
20. Where you sell the average number of your beef cattle per marketed?
a.Dusta_____b. Cheriko_____c.Gadda-Gute_____d. Sailaja_____e.Other_____
21. How many beef cattle have you purchased for fattening in the past 12 months and how much?
Number_____ Unit Price_____ Total Price _____When/Months:-
a. July–September _____ b.October-December_____

c. January-March _____ d. April-June _____

22. On which months of the year do you prefer to start cattle fattening? _____

Reason to prefer _____

23. How many beef cattle have you sold in the past 12 months and how much?
Number_____ Unit Price_____ Total Price _____When/Months:-
a. July–September _____ b.October-December_____

c. January-March _____ d. April-June _____

24. On which months of the year do you prefer to sell beef cattle? _____

Reason to prefer _____

25. Mainly from whom you purchased the proportion of your beef cattle? (More than one answer is possible)

a. producer _____ b. Small trader _____C. large trader ____ d.Others (specify) _____

26. Mainly to whom you sold the proportion of your beef cattle? (More than one answer is possible) a. Butchers _____b. Hotels and restaurant owners _____

c. smaller traders' _____d. larger traders' e. consumers_____

27. How many times do you fatten the cattle within a year?

a. Only one time b. two time's c. three time's d. four times

28. What is the average number of fattening cattle you have per fattening period?_____

29. What type of cattle do you prefer for fattening purpose? (Rank in the order of preference)

a).Old oxen b).Matured oxen c) Young bull d). Females e) Others _____

Explain the reasons_____

30. How many beef cattle you were supplying to the market once? _____

31. Are there any marketing facilitate that you used in this market place? a. Yes b. No

32. If your answer for Q31 is yes, what are they? a. Weighting facility b. fence c. holding ground d. Toilet and Loading rams facilities. Others, please mention _____

33. Do you have access to market information service for sold/buy beef cattle? a. yes b. no

34. If your answer for 33 is yes, how did you evaluate the adequacy of this market information? a. Very low b. Low c. Moderate d .High e. Very high

35. Do you have access to veterinary service for your beef cattle? a. yes b. no

36. Did you pay for the veterinary service? a. yes b. no

37. Did you get/take credit for the beef cattle farming? a. yes b. no

38. If yes, from where/whom did you take the credit and how much?

a. Relatives_____ birr b. Traders_____ birr

c. OCSSC _____ birr d. Others (specify)_____

39. Do you have frequently extension service for your beef cattle? a. yes b. no

40. How many frequency of extension with contact you per year? _____

41. How did you evaluate the adequacy of this frequency of extension contact?

a. Very low b. Low c. Moderate d. High e. Very high

40. What body condition of beef cattle you owned? a. Poor b. Average c. Good

42. Holidays determine (change) your cattle price at the market place? a. yes b.no

43. What are the major holidays mostly the price of beef cattle high (Rank 1, 2, 3…in order of holiday)? a._____ b._____ c._____ d._____ e ._____ f._____

44. Who sets the prices?

a. The producer b. Through bargaining c. Buyer d. Other (Specify_____

45. How you sales or purchases your animals?

a. Body size basis b. 'Eye ball' Estimation c .both d. others

46. How much on average purchasing price per beef cattle for fattening _____? ETB

48. How much on average selling price per beef cattle _____? ETB

49. How much money you're spent on the production per beef cattle ETB?

Cost Items	Unit	Unit Price	Total price	Remark
Purchasing price				
Labor cost				
Feed cost				
Materials				
Transport				
Tax				
Broker fee				
Veterinary cost				
Other expenses				
Total cost				

50. What did you Challenges and opportunities in the beef cattle producing and marketing?

1. Challenges

_____
_____
_____
_____

2. Opportunities

_____
_____
_____
_____

2. TRADERS

1. Name of the respondents _____a. large trader b. small trader

2. Gender of the respondents _____

3. Age of the respondents' _____

4. Religion of the respondents: - a. Muslim b. Orthodox c. protestant d. others_____

5. Marital status of the respondents: -a. Single b. Married

6. Education level of the respondents: - a. Illiterate b. Primary c. Secondary d. College

7. What is the family size and composition: -a. Male _____ b. Female_____c.Total _____

8. Which year did you start doing this business? _____

9. Where you purchase the average number of your beef cattle per marketed for trading?

a.Dusta_____b. Cheriko____ c.Gadda-Gute_____ d. Sailaja_____ c.Other_____

10. Where you sold the average number of your beef cattle per marketed?

a.Dusta_____b. Agaro_____ c. Jimma _____ d.Wolkite_____

e. Addis Ababa_____ f. Others (specify) _____

11. Where is the final endpoint of these beef cattle from this market_____?

12. Mainly from whom you purchase the proportion of your beef cattle?

(More than one answer is possible)

a. producer _____b. Small trader _____c. large trader_____d. others (specify) ____

13. Mainly to whom you sell the proportion of your beef cattle?

(More than one answer is possible) a. Slaughter house, _____ b. Small trader _____

c. large trader_____ d. hotel/restaurant_____ e Direct for the consumer _____

f. others (specify) ____

14. How many beef cattle have you purchased and sold in the past 12 months and how much?

Number_____ Unit Price_____ Total Price _____When/Months: -

a. July–September _____ b.October-December_____ c.January-March ____ d.April-June___

15. How many beef cattle you were supplying to the market once? _____

16. What is the current number of beef cattle marketing on your hand?

Mention the number_____

17. Over the past 5 years, have the number beef cattle marketed changed?

a.2004E.C_____b.2005E.C_____ c.2006E.C_____d.2007E.C_____ e.2008E.C_____

Reasons for this change (increased/ decreased)?

_____

18. Who sets the prices?

a. The producer b. Through bargaining c. Buyer d. Other (Specify)_____

19. How you trade your beef cattle's?

a. Body size basis b. 'Eye ball' Estimation c .both d. others

20. Are there any marketing facilitate that you used in this market place? a. Yes b. No

21. If your answer for Q20 is yes, what are they?

a. Weighting facility b. fence c. holding ground d. Toilet and Loading rams facilities

e. Others, please mention _____

22. How did you evaluate the adequacy of the facilities?

a. Very low b. Low c. Moderate d. High e. Very high

23. What are the sources of the working capital run this business?

a. Own b. Friend or Relative c. Ekub d. Other traders

e. Borrowed/credit f. Another source_____

24. Do you have any source of income other than the beef cattle trading?a. Yes b. no

25. If yes, how much is your income per /year in birr? _____ Birr

26. What mode of transportation do you use? a. Trekking b. Trucking c. Other_____

27. On average how many beef cattle's do you trek/truck on marketing day_____?

28. Do you have access to market information service for sold/buy beef cattle? a. yes b. no

29. If your answer for 28 is yes, how did you evaluate the adequacy of this market information?
a. Very low b. Low c. Moderate d .High e. Very high

30. How long does it take you to reach the resale market?

a. 1 day b.2 day c. >2day

31. What you can do if you cannot sell the animal you offered to the market?

a. Take them back to the home b. Take them to the other market c. Sell at lower price

d. Other means indicate_____

32. Do you pay the tax for the beef cattle you purchase? a. Yes b. No

33. If your answer for Q31 is yes, where?

a. at purchase place b. On the way of journey's c. at endpointd.at all place

34. What is the base for this tax?

a. Age b. Sex c. body size d. Number e. The same payment

35. How much you pay tax per beef cattle_____birr? /other mentions_____

36. What is your opinion regarding the market fee paid in this market compare to other markets?

a. Very low b. Low c. Moderate d. High e. Very high f. No difference

37. Does beef cattle " trading in this market need the trading license? a. Yes b. No

38. Are you licensed? a. Yes b. No

39. If your answer for 38 is No, what is your reason?

a. The complicated nature of the licensing procedure b. High pays for license

c. High capital requirement to be licensed d. I do not have reason

40. If you are licensed:

1. How does the procedure look like to get the license? a. Complicate b. Easy

2. How much do you pay for beef cattle‟ trade license? _____birr

3. What is the minimum capital requirement to be licensed _____birr?

4. How much you pay to renew the license _____birr

41. How much on average purchasing price per beef cattle _____? ETB

42. How much money you're spent on the marketing beef cattle per beef cattle ETB?

Cost Items	Unit	Unit Price	Total price	Remark
Purchasing price				
Labor				
Feed cost				
Materials				
Transport				
Tax				
Broker fee				
License cost				
Other expenses				
Total cost				

42. What did you Challenges and opportunities in the beef cattle producing and marketing?

1. Challenges

_____
_____
_____
_____**2.Opportuniti**
es
_____
_____
_____
_____

3. Butchers

1. How long since you engaged in slaughtering activity? _____
2. What are the numbers of beef cattle on average slaughter? per day_____ per week_____
3. From one beef cattle on average how much carcasses you have been get ?_____kg
4. How much you selling price per kg _____? ETB
5. How much money you're spent on the slaughtering per beef cattle _____ETB?
6. What did you Challenges and opportunities in the beef cattle producing and marketing?

1. Challenges

_____
_____

2.Opportunities

_____
_____

4. Brokers

1. How long since you engaged in brokering activity? _____
2. What are the numbers of transaction lives animal you handle in a one market day? ____
3. What are the numbers of transaction lives animal you handle per weeks? _____
4. Amount of commission you charge to seller per unit of the live animal _____ETB
5. Amount of commission you charge to buyer per unit of the live animal _____ETB
6. Do you have license for doing brokering business? a. yeas b.no

7. What did you Challenges and opportunities in the beef cattle producing and marketing?

1. Challenges

_____
_____

2. Opportunities

_____
_____

5. Secondary data

5.1. Livestock and fisher office

1. How to evaluated pass 5 years trend beef cattle fattening practices in your district

a.2004E.C_____b.2005E.C_____ c.2006E.C_____d.2007E.C_____ e.2008E.C_____

Mentions the reason to change (increased/ decreased)?

_____

2. How many grazing land holding in your district's_____hek

3. Cattle holding and composition in your woreda

No	Kebele	Household		Distribution Of cattle Types By kebele									
				Ox		Cow		Bull		Heifer		Calve	
		Beef cattle producer	Beef cattle producer	Own	Fatted	Own	Fatted	Own	Fatted	Own	Fatted	Own	Fatted
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
Total													

5.2. Trade and Market development office

1) What the name of markets and number of cattle supplied per market

No	Market name	Cattle supplied per market	Day of Market	Area of Market M^2	market holdings facility services such as loading ramps, holding facilities & fencing etc mentions
1					
2					
3					
4					

2) How many traders involved on livestock trade in your woreda_____?

1. Licensed _____2.none licensed_____

3) How many cattle pass with Pass –Permit per market day _____?

4) How many cattle pass with Pass –Permit in last year _____?

5) How many beef cattle load per truck _____?

1. Isuzu truck _____ 2. FSR truck_____

5.3. Gera Revenue Authority

1) How much tax paid received from beef cattle trader per cattle _____?

2) How much tax paid received from beef cattle trader per truck _____?

3) How much revenue collection from beef cattle trade tax in 5 years trend _____?

2011	2012	2013	2014	2015	2016

SWOT Analysis ranking to identified by Weight (%) Key informants

Strength		Value of weights (0-10)	Rating (1-4)	Rank
S_1	High land owned			
S_2	Planting of forage on established watershed areas			
S_3	High interest beef cattle fatting			
S_4	Had indigenous knowledge animal healthcare			
S_5	Identified beef cattle price increasing period			
S_6	Had more experiences in cattle fatting			
S_7	Had large number of labour force			
S_8	large number cattle owned			
S_9	Beginning of communication and information exchange			
Total Strength				
Weakness				
W_1	Inadequate access to market facility			
W_2	Poor linkage with concerned body			
W_3	Existing market participants illegal intermediate			
W_4	Absence to responsible for supplementary feed (Unavailability of agro- industrial by-product such as molasses, cereal milling by- product and oilseed meals)			
W_5	Poor grazing land management			
W_6	Insufficient best practice transfer from one to another person			
W_7	Separation of the government office in production & marketing activities			
W_8	Inadequate scientific fattening know-hows			
	Total Weaknesses			
	Total			

Opportunities		Value of weights (0-10)	Rating (1-4)	Rank
O_1	It has suitable climate appropriate planting materials, low labor costs			
O_2	Increased interest and capacity local consumption			
O_3	Raw meat is strongly rooted in Ethiopian culture			
O_4	Beginning of government improved livestock sector			
O_5	Existing of livestock expert in each kebeles			
O_6	Existing of FTC for learning institutions			
O_7	Better coordinate policy			
O_8	Involvement of the youth enterprises			
O_9	Sustainable development			
	Total opportunity			
	Threats			
T_1	Unpredictable weather that affects beef cattle status			
T_2	Fluctuating beef cattle prices and unstable			
T_3	Tax problem (multiple and high taxation; payment for unsold animal)			
T_4	Reducing grazing land for other purpose			
T_5	Increase in cattle prices and feed prices			
T_6	Sometime arise parasites and zoometric disease			
T_7	Turnover (unwillingness) of expert properly provided extension service to farmers due to low salary or none incentive			
T_8	Broker fee and inappropriate interfering			
T_9	Unwilling (refused) of credit due to borrowing subject to interest charges is not allowed from a religious			
T_{10}	High transportation cost (Illegal charge for cattle marketing)			
	Total Threat			
	Total			