CHALLENGES AGAINST MARKET PARTICIPATION OF SMALLHOLDER LIVESTOCK PRODUCERS IN ASALs OF KENYA – THE CASE OF REGAL-IR

BY

AMANUEL M. DIBABA

UNITED STATES INTERNATIONAL UNIVERSITY - AFRICA

SPRING 2017
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A Project Report Submitted to the School of Business in Partial Fulfilment of the Requirement for the Degree of Masters in Business Administration (MBA)

UNITED STATES INTERNATIONAL UNIVERSITY AFRICA

SPRING 2017
STUDENT’S DECLARATION

I, the undersigned Declare that this is my original work and has not been submitted to any other college, institution, or university other than the United States International University in Nairobi for academic credit.

Signed: _______________________ Date: ______________________

Amanuel Dibaba (ID 649975)

This project has been presented for examination with my approval as appointed supervisor.

Signed: _______________________ Date: ______________________

Professor Francis Wambalaba

Signed: _______________________ Date: ______________________

Dean, Chandaria School of Business
ACKNOWLEDGEMENT

I would like to acknowledge my research supervisor Professor Francis Wambalaba for his very valuable guidance in developing the research project proposal. I would also like to extend my appreciation to Mr. Anthony Murithi Ariungu and the REGAL-IR field team in Turkana, Garissa and Isiolo counties for tirelessly working with me during the data collection exercise. I wouldn’t have enrolled in this MBA course and successfully conduct my research if it was not for the support from my then supervisor Matthew Lovick. Lastly, my gratitude goes to Humphrey Maloba who assisted me in conducting the statistical analysis and Naomi Senda & Thomas Midialo for their assistance in editing the draft report.
DEDICATION

This work is dedicated to my parents; my Father Mulatu Dibaba and my late mother Ethenesh Benti who were always keen to see me advance my education. I would also like to dedicate this work to my wife Hiwote Nebiat in recognition of her continued support and encouragement during my studies.
ABSTRACT
The purpose of this study was to determine challenges against market participation of smallholder livestock producers in ASALs of Kenya. The research objectives for the study were: to examine the socio-economic causes for the poor market performance of smallholder livestock producers in ASALs; Analyze institutional and policy gaps limiting market engagement by smallholder livestock producers in ASALs of Kenya; Assess best practices for adoption to overcome market barriers to smallholder livestock producers in ASALs of Kenya.

This study utilized an explanatory research design. The study population was 940 smallholder livestock producers supported by REGAL-IR in ASALs of Kenya. The sample size of the study was 274 smallholder livestock farmers in Isiolo, Turkana and Garissa Counties. A total of 274 questionnaires were administered and two sixty-nine (269) were fully filled, giving a response rate of 98% which was sufficient. Descriptive statistics utilized to analyze the research findings included frequencies, mean.

The findings of the study related to the first research objective indicated inverse relationship between successful market engagement of smallholder livestock producers’ and socioeconomic factors namely gender relations in the household, complexity of value chains and access to reliable market information currently prevailing in ASALs of Kenya. Majority of the smallholders tend to sell their livestock to middle men which is among the deterrent to their ability to extensively engage in livestock value chains. As a result of selling their livestock to the middlemen, smallholders lose .037 Ksh for every livestock.

The finds of the second research objective revealed that policy and institutional factors do not favor successful participations of smallholders in livestock value chain in ASALs of Kenya. The policy and institutional factors with reckonable negative impact on the participation and benefit of smallholders in livestock trading includes lack of access to market information and distance to livestock markets. The research findings showed a statistically significant negative relationship between the number of livestock sold and the distance to livestock market (rho =-0.148, p<0.05). Number of livestock sold decreased for every 0.062 Kms further distance traveled to the market.
Analysis of the third research objective demonstrated that respondents prefer successful programs in sustainable management of grazing and water resources at the grassroots; affordable provision of veterinary supplies and inputs; best practice in expanding and developing livestock market and provision of loan to smallholder livestock producers. The KII respondents emphasized the need for extensive replication of the co-management model of livestock markets as the best practice to be promoted throughout the ASALs.

The study concluded that as pastoralists get more reliable information about price of livestock, they sale more livestock than when the price information is unreliable. The study also determined that pastoralists better engage with livestock value chain as the distance to market and access to financial services improve. The study proved the need for smallholder producers need to be organized into groups to improve their credit worth. Best practices options including successful programs in sustainable management of grazing and water resources at the grassroots; affordable provision of veterinary supplies and inputs as well as in expanding and developing livestock market and provision of loan to smallholder livestock producers can effectively be replicated in ASALs of Kenya.

The study recommended enhancing efforts by government and non-government organization to avail market information together with complementary intervention aimed at strengthening the capacity of producers to use information to their advantage. It also recommended that the devolved government should double its investment in construction of market infrastructure to enhance market access such that pastoralists in ASALs of Kenya could benefit from participation in livestock value chain. Lastly, the study recommends an in depth research to be conducted to extensively quantify and present economic cost of forgone opportunities from the regressive livestock sector in ASALs.
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## ACRONYMS AND ABBREVIATIONS

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<td>Analysis of Variances</td>
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<td>CLMC-</td>
<td>County Livestock Marketing Commission</td>
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<tr>
<td>GDP-</td>
<td>Gross Domestic Product</td>
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<td>IR-</td>
<td>Improving Resilience</td>
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<td>KLMC-</td>
<td>Kenya Livestock Marketing Commission</td>
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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

The livestock sector is a major player in the global economy with significant and wide-ranging socioeconomic impacts. Livestock production employs 1.3 billion people, providing livelihoods for 1 billion of the world’s poor, and accounts for 40 percent (40%) of global agricultural Gross Domestic Product (GDP) (Tully, 2014). Currently, the livestock sub-sector is rapidly growing as compared to the other agriculture sub-sectors. The livestock sector in the developing world is growing faster than most other agricultural subsectors (The World Bank, 2009). There is however a disparity in the growth of the livestock sector between the developed and the developing world. The global livestock sector is rapidly growing in response to increasing demand for animal-source foods, driven by population growth and increasing wealth in much of the developing world (FAO, 2011). In developed countries, on the other hand, production and consumption of livestock products is growing only slowly or at a stagnating rate (Thornton, 2010).

The growth in the livestock sector presents both enormous opportunities and challenges for the smallholder in the developing world. Despite the revolution in the livestock industry, the neglect of livestock in public policy has led to the exclusion of smallholders from the benefits of the growth in this sector (The World Bank, 2009). According to Negassa, Rashid, and Gebremedhin (2011), although livestock production and associated products offer significant opportunities for economic growth and poverty reduction, smallholder livestock producers in the developing world are characterized by low levels of market participation. Therefore, there is a need for development of policy framework to address barriers to entry facing smallholder livestock producers to enable them benefit from growth in the livestock sector. Holloway and Ehui (2001), argued that inappropriate policies and misallocation of investment resources in the livestock sector could skew the distribution of benefits away from smallholders.

The livestock production system in the developed world primarily follows an intensive production approach aimed at commercial farming and is predominantly controlled by larger
firms. Industrial food-animal production involves intensive animal husbandry under highly controlled conditions, where industrial feeds often replace access to forage crops (Otte & et al., 2007). In the United Kingdom for instance, the intensification of the livestock production system goes to extent where animals are ‘engineered’ to high productivity and into exclusively all-year round indoor systems, consuming foodstuffs for rapid resource gain (Wathes, 2013). Although this approach could guarantee increased quantity and quality of production, it’s mostly unfavorable to smallholders. In the industrialized livestock production system, smallholder livestock keepers become contract farmers, receiving most of their inputs from the large companies who then buy live animals from smallholders for processing and distribution (FAO, 2011).

On the other hand, majority of smallholder livestock producers in the developing world practice subsistence livestock production systems without using significant external inputs. The livestock production system by subsistence livestock producers aims at optimizing use of limited available resources and minimizing external inputs as opposed to maximizing profit by the resource reach (Rangnekar, 2009). Upton (2000), explains that the bulk of animal protein consumed in developing countries is supplied by small-scale, subsistence, producer-households. In Bangladesh for example, livestock production system is not well integrated and the maximum value is not always gained from system inputs and outputs (Dugdill, 2017).

Markets are of fundamental importance to the survival and livelihoods of the rural poor. They are institutions that enable smallholders to sell their produce as well as purchase inputs. Market, refers to any institutional arrangement in which households sell a good or service and others buy it (Mercy Corps, 2008). Markets are arrangements through which buyers and sellers exchange goods and services and are the central organizing principle at the heart of successful economies (DIFI & SCD, 2008). However, where markets operate inefficiently, poor people have very little opportunity to benefit from them. Taylor (2008), argues that without proper access to markets, a poor household cannot market produce, obtain inputs, sell labor, or obtain consumption goods at fair prices.
A useful tool to understand the function of markets is value chain analysis. According to Kanji et al. (2005), value chain is the methodology used to analyze the full range of activities which are required to bring a product or service from conception, through the different phases of production, delivery to final consumers, and final disposal after use. Ensign (2001) further explains that a value chain is a way of conceptualizing the activities that are needed in order to provide a product or service to a customer. Livestock value chain will be emphasized throughout this study to analyze the trends and sequences of live animal markets. The livestock value chain can be defined as the full range of activities required to bring live animals or animal products to final consumers passing through the different phases of production, processing, and delivery (IFAD, 2010). Livestock value chain studies describe the processes through which livestock and other inputs pass during the production process together with the resulting variety of products at the end of the chain (Taylor, 2012).

As highlighted in the earlier paragraphs, the global demand for livestock products will likely continue to drive the growth of the livestock sector. However, there will be a significant disparity in the growth trend in different parts of the world. The trend in the growth in the livestock sector is characterized by slow growth in the industrial countries, a recovery in the transition countries and a pronounced slowdown from rapid to moderate growth rates in the developing countries that experienced fast growth in livestock production in the past such as China and Brazil (Bruinsma, 2003). According to Thornton (2010), livestock production is likely to be increasingly characterized by differences between developed and developing countries, and between highly intensive production in systems in the developed world on one hand and smallholder and agro-pastoral systems in the developing countries on the other. There is further disparity in the economic importance and production value of the livestock systems among the developing countries. According to Boto (2012), Asia represents almost 60% of the total value of animal production in the developing world, followed by the Latin America and Caribbean region with just over 25%, West Asia and North Africa with 8%, and sub-Saharan Africa with around 7%.

In the United States in 2012, almost one million farms had cattle and calves and only a small number are meant for dairy production. Although the population of dairy cows has remained stable over a decade, beef cows are widely distributed across the country. Central States led
by Texas, Missouri, Nebraska, and Oklahoma have a higher number of beef cows. Cattle are fed on a ration of grain in preparation for slaughter, and the majority are found in States with massive grain supplies (Taylor, 2012). In the UK, however, the scale of farm animals has grown substantially over the past decades, although in Britain there has been a significant concern about global food consumption heavily relying on animal products rather than plants (IFAD, 2010).

Seventy per cent (70%) of the rural population in Africa owns livestock and over 200 million people rely on livestock for income (IUCN, 2010). Hence, livestock forms a major part of household assets for smallholders in Africa. According to Smith (2015), livestock are critical to rural incomes, nutrition and food security, and resilience in smallholder mixed crop/livestock and pastoral systems in much of Africa. Anteneh (1989), determined that African pastoralists generate a significant proportion of their cash income from livestock in order to purchase grains. According to (FAO, 2016), smallholder farming in Africa is predominantly carried out by small, autonomous family units with a labor force averaging between one and three adult-equivalents, cultivating an area ranging from 0.5 to 5 ha.

The largest number of pastoral/agro-pastoral livestock in Africa is found in the East African region (Boto, 2012). 98 million cattle and 173 million sheep and goats are kept under traditional husbandry, involving low input and marginal productivity in the East African region (Knips, 2004). Despite its important role as a source of income, livestock production among the countries of the sub-region is constrained by civil strife, displacement of inhabitants and climatic conditions (FAO, 2007). The livestock sector in the East African region is also characterized by inadequate market infrastructure and systems. The regional livestock trade although valued at close to $ 60 million, is characterized by market inefficiencies and challenges (COMESA, 2009).

The livestock sub-sector in Kenyan plays a major role in the national economy. According to (Republic of Kenya, Ministry of Livestock Development, 2008), the sub-sector accounts for about 10% of the country’s GDP; about 42% of the overall produce of the agricultural sector and accounts for about 30% of the total marketed agricultural products. In Kenya, the livestock subsector accounts for 30 percent (30%) of the farm gate value of the agricultural
commodities (Njanja, 2003). A study conducted by IGAD in 2011 further demonstrated that livestock’s contribution to Kenyan agricultural gross domestic product (GDP) was more than two and a half times larger than the official estimate for 2009, the most recent year for which there was complete data.

A significant portion of Kenya’s livestock wealth is concentrated in the Arid and Semi-Arid Lands (ASALs). Over 60% of all livestock in Kenya is found in the Arid and Semi-Arid Lands (ASAL), where it employs about 90 percent (90%) of the local population. (Republic of Kenya, Ministry of Livestock Development, 2008). According to Wario (2004), ASALs account for 50% of the livestock, 3% of agricultural output, and 7% of commercial output for the nation. However, livestock production in ASALs faces many challenges that are limiting the performance of the livestock sub-sector. According to Tully (2014), pastoralists in ASALs lack access to finances, markets infrastructures, and extension services such as veterinary care among others. Despite the significant livestock resources, pastoralist areas in ASALs of Kenya have the highest incidences of poverty and the least access to basic services in the country (Tilistone et al., 2013). ASALs have not received policy attention commensurate with their status in the country. Instead, they have historically been marginalized in terms of resource allocation, infrastructure development, social service delivery, and economic transformation (Odhiambo, 2013).

In recognition of these challenges, the Resilience and Economic Growth in Arid Lands – Improving Resilience (REGAL-IR) project has been implementing various activities aimed at strengthening the social, economic, and environmental resilience for close to 600,000 pastoralist in ASALS of Kenya with funding from the United States Agency for International Development (USAID). The program covers five counties in ASALs of Kenya namely Garissa, Isiolo, Marsabit, Turkana, and Wajir. Under the livelihoods diversification component of its programming, REGAL-IR organizes the pastoralist community into Self-Help Groups (SHG’s) and provides training and start-up capital to enable the SHGs initiate various businesses including livestock trade, food vending, beekeeping, poultry, skins and hides processing, horticulture and milk and meat trade. Out of the 442 such groups supported by the project, 88 groups (20%) are involved in livestock trade. Despite being the largest single business venture practiced by the SHGs, the businesses have not yielded satisfactory
returns to the group members even after two years of operation. This research aims at examining the barriers to markets facing SHGs engaged in small-scale livestock trade with support from REGAL-IR. The research also intends to recommend practical solutions to overcome these bottlenecks to improve the performance of current and future star-up business focusing on live animal trade in ASALs of Kenya.

1.2 Statement of the Problem

The livestock sector accounts for 50% of Kenya’s total livestock population, amounting to some 1.6 million tropical animal units which provide 90% of the regions’ employment and 50% of their household incomes (Nyanjom, 2014). Pastoralism makes a significant contribution to the gross domestic product (GDP) in many East African countries and around ten percent (10%) in Kenya (Oxfam, 2008). However, livestock trade in ASALs faces many challenges. Smallholder livestock traders lack access to market information, business capital, and entrepreneurship skills. Pastoralists in ASALs lack access to financial services such as credit facilities, which impedes livestock production and marketing (Tully, 2014).

In recognition of these challenges, the REGAL-IR project has been implementing a resilience and economic growth program with an objective to improve the capacity of the pastoralist communities in ASALs to withstand periodic shocks such as drought and floods. As part of its resilience strategy, REGAL-IR is working to diversify the livelihood and income sources of its beneficiaries by assisting them engage in alternative productive activities to compliment traditional pastoralist livelihood. Livestock trade is one of the different business ventures that the groups supported by REGAL-IR are currently practicing.

However, despite the support provided in terms of business training & injection of working capital, majority of the livestock businesses are not growing satisfactorily. The poor performance of the livestock trade has in return constrained the benefit that the community would have obtained from the donor investment in this intervention. The limitations to actively engage with markets restricted the turnover and returns from the sales of live animals. The SHGs involved in livestock trade are hence forced to keep live animals for longer periods as they wait for potential buyers. Consequently, the overall off-take of live animals reduces leading to gradual overstocking at household and community levels. This research examines the challenges faced by small-scale livestock traders in ASALs of Kenya.
and come-ups with applicable solution to overcome these hurdles. It attempts to outline key recommendations to donors, the private sector, as well as government and non-governmental stakeholders supporting community-based livestock trade in ASALs of Kenya.

1.3 General Objective

This research analyzes the challenges faced by smallholder livestock producers in Arid Lands of Kenya.

1.4 Specific objectives

The specific research objectives were:

1.4.1 Examine the socio–economic causes for the poor market performance of smallholder livestock producers in ASALs.

1.4.2 Analyze institutional and policy gaps limiting market engagement by smallholder livestock producers in ASALs of Kenya.

1.4.3 Assess best practices for adoption to overcome market barriers to smallholder livestock producers in ASALs of Kenya.

1.5 Significance of the Study

1.5.1 Small Scale Livestock Traders in ASALs of Kenya

The findings of this study will provide smallholder livestock producers with the necessary knowledge to better understand the dynamics of the livestock markets and improve their engagement to obtain better returns.

1.5.2 Government and Non-governmental Organizations

The study would benefit governmental & non-governmental organizations working to improve the performance of smallholder livestock producers in ASALs of Kenya through providing data and information to guide their decisions and actions in supporting smallholder livestock producers in ASALs.
1.5.3 Policy Makers

Both National and County governments will benefit from this research. The recommendations from this study will inform the decision by government authorities to formulate favorably policies and legislations to improve market access and engagement by smallholder livestock traders in ASALs of Kenya.

1.5.4 Researchers

This research would serve as a foundation for future researchers studying the function and nature of the livestock market and enhance the role of small-scale livestock traders in ASALs of Kenya. This study will also help researchers and academicians to confirm or advance the findings of this research.

1.6 Scope of the Study

The study targets the Resilience and Economic Growth in Arid Lands-Improving Resilience (REGAL-IR) supported Self-Help Groups (SHGs) involved in livestock trading in ASALs of Kenya. The study is conducted in Turkana, Isiolo and Garissa counties respectively. Administrative Wards where the REGAL-IR project has been active in supporting livestock traders are targeted for data collection. The 940 members of the 48 SHGs engaged in livestock business with the support from the REGAL-IR project forms the target population for the study. In addition, 7 key informant interviews are conducted with KLMC (1), CLMC (3) and grassroots LMA (3) members. The study is conducted in September & October 2016. Security treats, inaccessibility due to impassable roads and respondent’s bias are among the anticipated limitations to the study.

1.7 Definition of Terms

1.7.1 Arid and Semi-Arid Lands (ASALs)

Arid and semi-arid lands are areas that receive 200-500 mm of short rains or 400-600 mm of the long rainfall (ILRI, 2008). According to David (2013), the defining feature of the ASALs is their aridity caused by low annual rainfall ranging between 150mm and 550mm in dry arid areas and between 550mm and 850mm per year for semi-arid areas combined with high temperature and high rates of evapo-transpiration throughout the year. Barakat (2004),
defines arid lands as regions where a combination of high temperature and high rainfall causes evaporation that exceeds precipitation.

1.7.2 Value Chain

Value chain is a supply chain made up of a series of actors; from input suppliers to producers and processors to exporters and buyers, engaged in the full range of activities required to bring a product from its conception to its end use (USAID, 2006). According to Ensign (2001), value chain is a way of depicting how a product gains value (and costs) as it moves along the path of design, production, marketing, delivery, and service to the customer. Value Chain is an approach for breaking down the sequence of business functions into relevant activities through which value is added (Jariwala, 2015).

1.7.3 Small Scale Enterprises

Small scale enterprises are those usually owner-managed or directly controlled by the owner-community (Calcopietro & Massawe, 1999). Kayanula and Quartey (2000), describe small scale enterprises as labor intensive business ventures that utilize indigenous knowledge to cater for the needs of the poor in the society. Micro enterprises are defined as enterprises with up to ten employees while small enterprises as those that have ten to 100 employees (ILO, 2015).

1.8 Chapter Summary

The global livestock sector is growing faster than other agriculture sectors. However there is a need to reexamine the current livestock production and marketing arrangement in favor of smallholder livestock producers to allow them benefit from growth in the sector. About 10% of the Kenya’s GDP and about 42% of the overall produce of the agricultural sector is generated from the livestock sector. The ASALs contribute 60% of Kenya’s livestock wealth. Nonetheless livestock production in ASALs faces many challenges that are limiting the performance of the livestock sub-sector. This research analyzes the challenges faced by small-scale livestock traders in arid lands of Kenya. It examines socio–economic, institutional and policy gaps limiting market engagement by small-scale livestock traders in ASALs of Kenya and comes up with practical solutions to overcome barriers to market entry facing small-scale livestock producers. The study targets the USAID/REGAL-IR supported
SHGs involved in livestock trading in ASALs of Kenya. The study is conducted in Turkana, Isiolo and Garissa counties in September and October 2016.

The next chapter (Chapter 2) entails a review of literature related to the problem statement and purpose of the study. Research methodologies is discussed in Chapter 3 while research findings are presented in Chapter 4. The conclusion and recommendations of the study are discussed in Chapter 5.
CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter analyzes various studies on market performance of smallholders; but with keen bias towards smallholder livestock producers. Socioeconomic causes for the poor market performance of smallholders is presented with reference to smallholder livestock producers first, followed by institutional and policy gaps limiting market engagement of smallholder livestock producers in the Horn of Africa with emphasis on the pastoralist communities in ASALs of Kenya. Best practices in promoting smallholders engagement with livestock market will be discussed in the final section. A chapter summary highlighting key learnings from the review of literature with reference to the research objectives is also provided at the end of the chapter.

2.2 Socioeconomic Factors Affecting Smallholder Livestock Production

2.2.1 Gender Roles in Smallholder Livestock Production

Gender is a socioeconomic characteristic that strongly influences livestock production among smallholders. Men and women in the family have distinct roles and decision making power in smallholder livestock production system. According to GIZ (2013), women often have a predominant role in managing poultry, dairy and other animals that are housed and fed within the homestead while men are more involved in herding of grazing animals and in the marketing of products if women’s mobility is constrained. Oladele (2013), made a similar argument based on a study conducted in Southern Africa where women play a primary responsibility for the husbandry of small animals and ruminants and perform duties such as herding, providing water and feed as well as milking of dairy animals. A study in Uganda, however, showed that men are general dominant in their role in livestock production although women also participated in all livestock management (Oluka, 2005). According to Kipuri (2008), livestock production among stallholder pastoralist is entirely dependent on the complementary roles of men and women where men often perform duties related to safe keeping herds and livestock trading and women take part in milking, producing butter, and
small-scale trading among others. Pastoralist women in Kenya are generally concentrated at the lower levels of the livestock value chains, where they undertake care for smaller, young and sick stock around homesteads, are responsible for milking and minimal milk processing (Care, 2014).

Regardless of the diverse opinions on the role of men and women in smallholder livestock production, gender roles in smallholder livestock husbandry largely varies from one region to the other and also depends on the type of livestock enterprise pursued. It is difficult to generalise the typical role of women within a livestock production system, as it differs even on a regional basis (Bravo-Baumann, 2000). In Pakistan for instance, a woman performs majority of the work in the household’s dairy farming including preparation of feed, collection of fodder, cleaning of animals and their sheds, making dung cakes, collection of manure for organic fertilizers, milking the cows and processing animal products (Amin, 2010). A study in Tanzania, on the other hand, revealed that all genders contributed at least some role in smallholder dairy farming with the exception that men and boys are not involved in milking and men generally contribute less labor compared to women (Kimaro, 2016). Therefore, a conclusion can be drawn that the participation of men and women in smallholder livestock production differs based on the purpose of the livestock husbandry and socio-cultural difference among communities in different regions.

Understanding the disparity in access and control over livestock resources between men and women also requires a closer analysis of the economic value of the livestock assets & products. Kristjanson (2010), found out that that women with limited control over livestock products and income from their sales, have more difficulty maintaining control as livestock become more economically attractive to men. In Tanzania, for example, women manage 49% of income from the sale of chicken, compared to 24% from the sale of cattle, but manage 50% of the income from milk sale (Njuki, 2013). In traditional dairy production practices in Ethiopia, women via the processing and sale of butter and cheese earn 69% of the dairy income (Tangka, 1999).

In pastoral communities, women mostly own fewer animals than men, however, livestock assets are generally more equitably distributed between men and women than are other assets.
like land (Flintan, 2008). According to Rota (2012), in many pastoral societies, women can own and have rights to diverse livestock assets and may have sole responsibility for decisions about their own herds although decisions regarding sales of livestock are usually made by husbands and wives together. Oxfam (2008), however, argues that women in pastoralist communities in the East African region, despite their responsibility for herding and livestock rearing, have less access to resources as compared to men. Women strongly influence the use of eggs, milk and poultry meat for home consumption, and often have control over marketing and the income from these products in both pastoralists and Agro-pastoralist households (GIZ, 2013). Similar to the disparity in their participation in livestock production, access to and control over livestock resources between men and women also varies from one region to the other and depends on the purpose and value of the livestock husbandry. Although in most societies all household members are involved in livestock production, the decision making processes within the family and the division of labour for activities differs between regions, societies and households (Bravo-Baumann, 2000).

2.2.2 Access to Market Information

Market information services commonly provide information on current market prices of agricultural products and inputs at different locations, allowing market participants to choose the location offering the best price (Arias, 2003). Market informations are crucial to producers, wholesalers and consumers on what and whether to buy and sale (ILRI, 1995). Shepherded (1997), explains that lack of market information is an entry barrier to both production and trade.

Lack of accurate and relevant market information has been identified as a major obstacle in efforts to improve the agriculture sector of African countries (Ferris, 2004). Shepherd (1997), determined that availability of market information can offer smallholders the opportunity to check on the price they receive vis-a-vis the prevailing market price. Rota (2010), also argued that inadequate and uncoordinated livestock market information systems is similarly among the barriers to livestock marketing that limit livestock-sector development with consequent negative impact on the smallholder producers. Therefore, a conclusion can be drawn that accurate, relevant, and timely market information is vital for the development of the livestock sector and competitive performance of smallholder livestock producers.
According to a livestock marketing study conducted by Pavalleno (2010), in Mandera in Kenya and the Borana zone in Ethiopia, poor and uneven access to market information remains a major constraint for smallholder livestock producers in the region. In a similar study conducted in Ethiopia, farmers and traders reported that they have none or very little access to formal livestock marketing information although traders might be better informed than farmers because of their networks. (Gebremedhin, 2007). A study conducted by Omiti (2009), in Kenya established that market information plays a significant role in smallholder decision on what quantity of output to supply to the market depending on the prevailing price. There is inadequate availability of market information in ASALs of Kenya leading to oversupply of livestock at terminal markets (Muthee, 2006). Lack of market information makes livestock farmers in the ASALs vulnerable to abuse by the few middlemen who are their only source of price information (AfDB, 2008).

From the discussions above, it can concluded that smallholder livestock producers in the Horn of Africa as well as those in ASALs of Kenya have limited access to market information and hence poor market performance. However, it’s important to note that availing market information alone won’t be adequate to improve the market participation of smallholders unless their capacity is improved in understanding and utilizing the price information. According to Pavanello (2010), efforts to improve producers’ access to price information will have limited impact in the absence of complementary efforts aimed at strengthening the capacity of producers to use information to their advantage.

2.2.3 Participation in Livestock Value Chain

Value chains can serve as an opportunity to link smallholder farmers in developing countries to progressive markets for consumer goods worldwide (Hartwich, 2012). Wonder (2014), found that transition from smallholder subsistence to a more commercial-focused production will require engagement with the value chain that connects agricultural producers to final consumers. According to Altenburg (2007), value chain analysis helps to understand barriers to entry, assess risks and opportunities as well as identify appropriate strategies for value chain integration to achieve pro-poor growth. A qualitative value chain approach however would be limited in answering the questions such as where to invest & what will be the economic impact on different chain actors (Rich, 2009). Therefore, deploying both
qualitative and quantitative analysis is important in using value chain to determine market competitiveness & promote pro-poor growth.

Livestock systems represent a potential opportunity out of poverty for many smallholders in developing world (Bhatt, 2012). Livestock value chains are long and complex and therefore provide enormous opportunities for the poor to participate in the value chain through the provision of inputs and services or in the marketing and processing of livestock products (Kristjanson 2010). However, McDermott et al. (2010), argues that the length and complexity of livestock value chains and the quality and safety standards demanded in livestock markets make it difficult for smallholders to compete in these value chains. Hence, a conclusion can be made that successful engagement of smallholders in livestock value chain requires a range of incentives including access to market information, development of market infrastructure as well as presence of a pro-poor policy environment.

In developing countries, most livestock produced by smallholder pastoralists are marketed by private entrepreneurs who collect, regroup, and trade the livestock and livestock products to terminal markets (Sperandini, 2010). Smallholder pastoralists in general have very limited access to intermediate or terminal markets along the value chain. According to Tully (2014), pastoralists in remote, underdeveloped areas are often unable to or have limited participation in the livestock value chain. A study conducted by Pavanello (2010), in Mandera in Kenya showed that long trekking distances to markets to be a significant impediment to pastoralists’ ability to benefit from livestock value chain. Poor roads have the impact of increasing costs when transporting livestock throughout Turkana district (Watson, 2008). Therefore, the poor status of market infrastructure and services are among the limitations to successful engagement of smallholder pastoralists in livestock value chains in ASALs of Kenya.

2.3 Institutional & Policy Gaps Affecting Smallholder Livestock Production

2.3.1 Policies Affecting Smallholder Livestock Producers

There is published evidence throughout the world that factors determining progress in livestock production are heavily influenced by policy in comparison with technology and other factors (ILRI, 1995). According to Anteneh, (1989), solutions to technical constraints
may be sought but may not be implemented if appropriate policies are not in place. Knips (2005), argued that farmers in Europe and North America were only willing and able to adopt technologies once an enabling policy environment was in place. Promoting equitable and efficient growth of the livestock sector therefore requires formulating and implementing policy agendas that address specific constraints in the sector.

Many policies both within and beyond the livestock domain, affect the development of the livestock sector and the livelihoods of the livestock-dependent poor. The current livestock policy drivers in Africa, Asia, and Latin America, however, appear not to take full advantage of the pro-poor opportunities provided by the global livestock revolution (Pica-Ciamarra, 2005). FAO (2008), suggests that policy makers should focus both on strategies for improving the livestock assets of the poor and mitigating the vulnerability which is caused by distress sales of livestock assets. According to AU/IBAR (2004), livestock policies are likely to succeed in poverty reduction only when they are consistent with the livelihoods strategies of the livestock-dependent poor and allow them to make full use of their scarce resources’ capacities to benefit from livestock sector growth. In addition to pro-poor focus, the success of policies promoting smallholders livestock production needs to be reinforced by good governance as well as long-term government and donor commitment to implement the policies.

Regardless of their substantial livestock wealth, most countries in Sub-Saharan Africa have given little attention to formulation of comprehensive livestock development policies. In Kenya and Ethiopia for instance, the livestock sub-sector is included in the nation policy documents that define the countries’ development priorities as more of an afterthought only after agitation by pressure groups (AU/IBAR, 2004). Kenya has developed a livestock policy that covers wide-ranging issues relating to the livestock sector including animal diseases, livestock marketing, food safety, veterinary research, and extension among others. Critics however, argue that, despite its contribution to the national economy, the livestock sector in Kenya hasn’t been given adequate emphasis by policy makers. According to Engida (2015), regardless of the substantial contribution of the livestock sector to the Kenyan economy, the importance of the livestock sector has often been underestimated by policy makers. McSherry (2008) also argues that considerable constraints to livelihood improvement exist
for Kenya’s smallholder livestock producers which includes outdated policies, combined with an exceedingly sluggish policy reform processes that is often stalled by the politically powerful.

Despite the shortcomings, several opportunities have recently emerged to prompt policy reforms, particularly in ASALs of Kenya, mainly driven by advocacy groups. As society progresses in Kenya, growing understanding that pastoralism is a viable lifestyle has emerged; a shift towards evidence-based decision making in policy circles in recognition of small livestock producers in the ASALs (McSherry, 2008). By the year 2007 when the Kenya Vision 2030 was published, the ASALs were considered the ‘new frontier’ for development and hence the Ministry of State for Development of Northern Kenya and other Arid Lands came with three broad priorities for the arid lands region (Elmi, 2013). The approval of the National Policy for the Sustainable Development of the Arid and Semi-Arid Lands of Kenya in 2012 acknowledges the problems faced by the ASALs and established the government’s new focus on fostering development for smallholder livestock producers (Tully, 2014). As discussed in the earlier paragraphs, Kenya has started on the right foot in terms of developing favorable policies for smallholder pastoralists, however, the country needs to implement all commitments in the ASAL policy documents with special focus on promoting the livelihoods of smallholder livestock producers.

2.3.2 Institutional Gaps affecting Smallholder Livestock Producers

2.3.2.1 Livestock Marketing Infrastructure

Previous studies indicate that some of the institutional gaps affecting smallholder livestock producers include remoteness of livestock markets, limitations in financial services and limited capacity of livestock marketing associations. With regard to livestock markets, Bekure (2016) highlights that market is an important aspect of any livestock system that provides the mechanism whereby producers exchange their livestock and livestock products for cash; for acquiring goods and services which they do not produce themselves. AfDB (2008), stated that well developed market infrastructure is necessary for the development of a sustainable livestock sector. Markets have the potential to strengthen pastoralists’ economy and harness participation of poor pastoralist producers along the value chain (Duncan, 2008). However, the livestock market systems in the East African region, home to the largest
number of pastoral livestock in Africa, is characterized by series of limitations resulting in poor performance of smallholders (Peccerella, 2012). Livestock marketing among East African smallholders is characterized by poor market infrastructure, insecurity, and unfavorable market access by herders where ethnicity tends to assume an important role in market transactions (Bailey, 1999).

A recent study by Makokha (2013) revealed that most of Kenya’s livestock marketing infrastructure in ASALs (i.e. holding grounds, quarantine stations, and stock routes) are dilapidated. Tully (2014), determined that inadequate market infrastructure is a significant constraint contributing to the inefficiency of livestock marketing in the ASALs of Kenya. According to Barrett (2004), improved transport and market infrastructure would benefit smallholder livestock producers and traders, and general market conditions in ASALs of Kenya.

However, it’s important to note that although well-established market infrastructure might be essential for livestock marketing, improved market facilities alone is not a sufficient condition for enhancing livestock commercialization in favor of smallholder producers. Simultaneous efforts need to be made to improving flow of market information, strengthen access to financial and related livestock services to enhance the successful market engagement of smallholder livestock producers. Initiatives aiming at developing basic livestock market centers need to be accompanied by efforts to improve services and capacities in pastoral areas (Pavanello, 2010).

2.3.2.2 Financial Institution and Access to Credit

Financial institutions, credit access is critical to the smallholder farmer because it improves the competitiveness of farming enterprises, expands employment opportunities, and diversifies exports (Kiplimo, 2013). However, access to a comprehensive range of financial services is a significant challenge for smallholders, who constitute the vast majority of farmers in developing countries (IFC, 2014). The provision of sustainable and adequate financial services to resource-poor rural households faces many challenges including; limited capacity of financial service providers and low level of client education (Thierry, 2011). Sharma (2015), explained that provision of timely access to adequate credit can uplift the
situation and living standards of the smallholders and raise their production levels. A similar view has been reflected by Hanson (2016), who asserts that providing smallholder farmers with access to credit is essential to unlocking long-term, sustainable gains in productivity and income. The provision of credit has increasingly been regarded as an important tool for raising the incomes of rural populations, mainly by mobilizing resources for more productive uses (Yehuala, 2008).

Total amount of credit supplied to smallholder farmers in the developing world is approximately $9 billion compared to the demand for smallholder financing, which is $450 billion globally (Zook, 2014). Besides the crucial importance in the overall development process, farmers in developing countries are to a large extent constrained by credit (Sharma, 2015). Most commercial banks are not interested in moving into the rural areas due to the low income levels, lack of scale economies, and poor infrastructure (Thierry, 2011).

In several Latin American countries, access to formal credit is only half as common in rural areas as it is in urban areas (HLPE, 2013). A similar situation prevails in Africa where there is a huge unmet demand for financial services by smallholder farmers. According to Thurow (2014), only a minuscule amount of commercial lending goes to rural areas in Africa, even though the demand for financial services among smallholder farmers remains higher than their ability to access these services. Better access to credit, especially for smallholder farmers, could bring about a revolution in African agriculture (Fin4Ag, 2014).

The credit market for smallholders in Sub-Saharan Africa is functioning very poorly and credit constraints are among the reason why smallholders fail to increase productivity (Shimokawa, 2006). For example, in Kenya, the lack of capital and access to affordable credit is cited by smallholders as the main factor behind the low productivity in agriculture (Adeleke, 2011). Less than 10% of the farmers have access to formal credit in Kenya (Fin4Ag, 2014). There are only a few agricultural credit institutions in Kenya which limits business start-up and improvement in the livestock sector (Muriuki, 2003).

Similarly, among the limitations affecting smallholder livestock production in Kenya has been the non-availability of capital (Republic of Kenya, Ministry of Livestock Development, 2008). Poor financial services including the provision of credit is major impediment to the
development the livestock sector in ASALs (Aklilu, 2008). The few banks that provide credit to livestock producers in Kenya have stringent requirements which can hardly be met by poor producers. Rangoma (2013), argues that, to qualify for loans in livestock sector, most banks would require securities and viable project proposal. Pastoralists in ASALs lack financial services, such as credit facilities, due to logistical issues of traveling and applying at bank branches as well as failure to qualify for loans since conventional banks don’t consider livestock as equitable assets (Tully, 2014).

**2.3.2.3 Livestock Marketing Associations**

Musemwa (2004) states that organizing smallholders into associations has the potential to allow smallholder livestock producers greater economies of scale in accessing services, information, and markets. Marketing institutions, such as livestock traders’ associations both at local and national levels, can play a key role in facilitating livestock trade (Sperandini, 2010). Livestock marketing associations empower livestock farmers with market information (knowledge of prices offered and potential buyers) which enables pastoralists to bargain from a point of strength when selling their livestock (Kibue, 2006). Support to livestock marketing groups in northern Kenya and southern Ethiopia constitutes a significant step towards building and strengthening capacity in pastoral areas (Pavanello, 2010).

Studies conducted in the Horn of Africa revealed the absence of vibrant national livestock producers and marketing associations. An audit in the livestock marketing status conducted by Aklilu (2002) for instance, found that although Ethiopia has a Livestock and Meat Exporters Association, the organization only operates only at the national level and is not capable of providing services for local livestock traders and producers who are the main suppliers of livestock to the exporters. A similar survey conducted by AU/IBAR (2004) revealed livestock keepers and traders in Kenya as being disorganized which has led to exploitation of smallholders by traders and middlemen.

A joint effort by both Governmental and Non-Governmental Organizations has since been able to foster well-functioning livestock marketing organizations at national and local levels; which play a vital role in empowering smallholder producers in Kenya. A study conducted by Duncan (2008), for instance, indicated that livestock markets are managed by Livestock Marketing Associations (LMA) consisting of 10 officials elected from amongst the
pastoralist community in Samburu County. The county (CLMC) and national (KLMC) livestock marketing councils have also been playing a role in policy engagement. KLMC had major contribution in drafting the new diary bill, the National Livestock Development Policy and the draft National Policy for Sustainable Development of ASALs of Kenya (Thomas, 2010). The Livestock Marketing Associations play an important role in mobilizing the pastoralists and linking them to various service providers and advocate for more resources for the ASALs (Thendiu, 2009). Efforts being made by livestock marketing associations in Kenya to advance the interest of smallholders, need to be supported by favorable policy and legislations that recognize and enhance the role of pastoralist associations and their contribution to improving the livelihoods of smallholders in ASALs.

2.4 Best Practices in Improving Market Participation of Smallholder Livestock Producers

The consequent integration of domestic and international markets present both opportunities as well as threats for smallholder livestock producers in developing countries (Otte, 2005). Smallholders can play an important role in the sustainable intensification of the livestock production only if pro-poor investments and policies are implemented (McDermott, 2010). Rota (2010), explains that economic and institutional barriers to livestock marketing negatively impact smallholder producers who depend on the sector for their livelihoods. Challenges against the market performance of smallholder livestock producers needs to be addressed to enable poor producers benefit from the increasing demand for livestock products worldwide. In view of this, best practices in improving market participation of smallholder producers in the livestock market will be discussed in the following sections with focus on policy formulation, financial inclusion, as well as access to livestock market information and their contribution to improving smallholder participation in the livestock value chain.

2.4.1 Best Practice: Financial Inclusion

Kenya only dedicates 3.3 % of the total credit extended to the economy to agricultural production, against the Maputo Declaration to allocate 10 % of the total credit to the sector (Kiplimo, 2013). In addition, the allocation of credit favors crop production as compared to
the livestock sector. Agricultural credit in Kenya is mainly and disproportionately channeled to arable crop production because pastoralism is considered to be practiced under risky and uncertain socio-economic condition; a view which has led to the discrimination of pastoralists in terms of their credit access. (Omiti, 2002). Aklilu (2008), further explains that poor financial services including access to credit are regarded as impediments to livestock marketing among pastoralists in ASALs of Kenya.

Lessons from different parts of the world, however, highlight possibilities to overcoming limitations to credit access by smallholders and improving their participation in the commercial livestock value chain. Through adoption of successful approaches from other parts of the world, attempts can be made to expand financial services to smallholders in ASALs of Kenya. The integrated approach implemented by USAID/Feed the Future (FtF) Livestock Development Program to commercialize smallholder beef production in Zimbabwe is one such example that can be replicated among smallholder livestock producers in other parts of Africa. In Zimbabwe, the USAID/Feed the Future Livestock Development Program developed an integrated approach to commercialize smallholder beef production by facilitating direct lending opportunities. The program trained smallholder farmers in good animal husbandry and business practices and linked them to financiers, input suppliers, and buyers. 155 farmers (29 percent women) formed 24 groups and received more than $32,000 worth of in-kind loans from Micro Finance Institutions (MFIs).

To enhance the participation of smallholders in the value chain, farmer groups were also linked to abattoirs for off-take of the market-ready animals. The results of this strategy in Zimbabwe offered positive benefits to smallholder farmers by increasing incomes and improving food security. According to Fintrack (2004), the farmers supported through this program got an opportunity to build their credit worthiness and establish long-lasting business relationships with value chain players. The value chain actors in turn benefit by entering new market segments and increasing their sales revenue at relatively lower transaction costs as business is conducted with farmer groups rather than individuals. The achievements of Centenary Bank in Uganda that provided $190 million in loans and collected about $300 million in total deposits working with 85,000 small rural borrowers in a few years (Meyer, 2013) represent another best performance in financial inclusion of
smallholders that can be replicated and adopted elsewhere in Africa including the ASALs of Kenya.

2.4.2 Best Practice: Policy Decision and Implementation

Most national livestock policies tend to assume that the overall objective for the sub-sector is increased production, yet production-increasing policies do not necessarily benefit the poor livestock keepers (Pica-Ciaramma, 2005). Studies conducted in Kenya, for instance, revealed that, the national livestock policy needs to include approaches to minimize barriers limiting livestock producers’ participation in value-added livestock production and access to high value markets (Kihiu, 2015). McSherry (2008), however, argues that policy-makers in Kenya have begun to view pastoralism as a viable economic enterprise in arid and semi-arid lands.

Although this positive mind shift has since led to development of favorable policies to enhance the performance of the livestock sector in ASALs, lesson from pro-poor policy developments suggests that good policy intentions can fail to deliver the desired outcomes when encountered by bureaucratic impediments. Policy makers in Kenya should therefore, not only be concerned about policy formulation, but also focus on devising effective implementation mechanisms.

For instance, despite the government’s decree to increase the sales price of milk in favour of smallholder cooperatives in Tamil Nadu in India, it took six months for the farmers to receive the benefit as staff in the cooperative unions and in the co-operative societies had taken advantage of the higher price to increase their own wages. In April 1998, the government further raised the producer price by another 1.49 rupee per litre but further requested the Milk Producers’ Federation to ensure the new price reached smallholders in full and to freeze wage rises in the milk unions and societies for six months. Regular inspections took place and venalities were dealt with severely. Six months after the second price increase and extensive follow-up, the production of milk raised from 1.55 to 2.32 million litres per day and membership of milk co-operative societies rose from 470,000 in June to 514,000 in September 1998 (Gurumurthi, 1999). Hence, this can be considered as a lesson to be adopted in ASALS of Kenya that policy formulation in favour of smallholders needs to be supported
by effective implementation arrangement and follow-up if subsistence producers have to benefit from such course of action.

2.4.3 Best Practice: Market Information and Pastoralist Engagement in livestock Value Chain.

Lack of information limits farmers’ choice of what to produce, how much to sell, where to sell, and the prices they receive for their output. Small-scale producers in most developing countries lack price information which leads to market inefficiency (Svensson, 2009). Smallholder livestock producers in ASALs of Kenya have intermittent access to well-structured market information. Tully (2014), explains that pastoralists in ASALs of Kenya rely on various informal sources including local traders, family members and friends, as well as observing the market themselves to get price information. A study conducted by Pavalleno (2010), in Mandera County in Kenya, revealed that smallholders obtain livestock price information by contacting brokers via mobile phones.

Best practice in disseminating market information among pastoralist communities in the Horn of Africa region can be replicated in ASALs of Kenya. A successful experience in ASALs of Ethiopia for instance could be implemented in ASALs of Kenya to help smallholders get reliable market information on a regular and timely manner. The USAID has supported the Global Livestock Collaborative Research Support Program (GLCRSP) to create a National Livestock Market Information System (NLMIS) in Ethiopia. The NLMIS aids Ethiopian pastoralists make better decisions on when to sell their livestock and earn increased income during times of economic hardship. The NLMIS collects and disseminates reliable and timely livestock market information to producers, traders, processors, and consumers to promote greater participation in local and regional markets using the latest information and communication technology (ICT); via text message, website, or weekly radio broadcasts. Through the USAID-supported NLMIS, pastoralists can monitor livestock prices and demand at distant markets and make better choices on when and where to sell livestock (Munro, 2012).

Rural communities can request market information via text message, website, or weekly radio broadcasts. USAID trained 90 market monitors and facilitated radio, text message, newspaper, and other outreach activities to help the Government of Ethiopia (GoE) promote
market information usage in pastoral communities. During the first four months of the GoE’s management of NLMIS, the system has expanded coverage from 32 to 45 livestock markets and reported a fourfold increase in the number of text message queries for market information. Through the USAID-supported NLMIS, pastoralists can monitor livestock prices and demand at distant markets and make better choices on when and where to sell livestock.

2.5 Chapter Summary

Smallholders’ participation in livestock market is greatly impacted by socioeconomic, policy and institutional factors. Among the key socio-economic, institutional and policy factors influencing smallholders’ effective participation in livestock value chain analyzed in this chapter includes gender dynamics at household level, access to market information and ability to participate and benefit from livestock value chain, accessibility of livestock markets, access to credit facilities as well as the availability and function of livestock marketing associations to influence policies in favor of the smallholders.

Livestock value chains provide enormous opportunities for smallholders to participate in the market either through the provision of inputs and services or marketing of their products. Successful engagement of smallholders in livestock value chain however requires a range of incentives including access to market information, well developed and easily accessible market infrastructures, reliable livestock price information and access to financial services.

Moreover, addressing socio-economic and institutional barriers limiting the successful participation smallholders in livestock value chain in ASALs also requires pro-poor policy and investment decision. Therefore, stakeholders working to advance the livelihoods of poor livestock producers should consider adopting successful experience from around the world to overcome barriers to market participation facing the smallholders in ASALs of Kenya.
CHAPTER THREE

3.0 METHODOLOGY

3.1. Introduction

This chapter explains the methodology of the research. It defines and justifies the research design. The methodology also describes the characteristics of the population involved and provides detailed description of the sampling procedures and sample size. Data sources as well as data collection procedures are also discussed in this chapter. The methodology further explains research procedures and data analysis methods. A chapter summary is presented at the end, giving a synopsis of elements discussed in the chapter.

3.2 Research Design

The research design for this study was an explanatory method. Explanatory research is conducted to discover and report some relationships among different aspects of the phenomenon under study (Ditsa, 2004). Explanatory research focuses on the why question (De Vaus, 2001). The adoption of an explanatory research design in this study therefore helps to connect causes and effects related to the poor market participation of smallholder livestock producers in ASALs of Kenya. Accordingly, participants answered questions administered through interviews. Information will be collected from the livestock keepers through using pre-tested questionnaires administered by interviewees. Smallholders engaged in livestock business with the support from the REGAL-IR project was the primary respondents of the study.

The key informants for the study included member of Kenya Livestock Marketing Council (KLMC), County Livestock Marketing Council (CLMC) member and a member from Livestock Marketing Associations (LMA). For discussions with key informants, a guide with open ended questions was used. The information to be collected include; the community's perception of men’s and women’s role in livestock production and marketing of livestock products, livestock trading and existing market infrastructures, key value chain players and their various roles, understanding and utilization of market information, access to financial
services, the role of marketing associations, the major constraints experienced in livestock marketing and suggestions for improvement.

3.3 Population and Sampling Design

3.3.1 Population

The research targets are 940 smallholder livestock keepers in ASALs of Kenya organized in to Self Help Groups (SHG) and supported by the REGAL-IR to practice livestock trading. Accordingly, REGAL-IR project beneficiaries in three counties namely, Garissa, Isiolo, and Turkana were the population involved in this research. The participants in the three counties gave a comparison of the livestock production and trading dynamics among the Turkana, Borana and Somali communities. Accordingly, Garissa County represent a total of 25 groups with 399 (255 M & 144M) beneficiaries located in 7 different wards followed by Turkana county which represents 14 SHG with a total of 358 (170 M & 188 F) distributed among 9 wards. Isiolo County represented 9 SHG with a total of 183 (148 M & 35 F) residing in 3 wards.

3.3.2 Sampling Design and Sample Size

The interview respondents were randomly selected through a two-stage cluster sampling design from a sampling frame which is a list of smallholders supported through livestock business star-up activities by REGAL-IR project. The reason for opting for two stage cluster sampling techniques is that survey area is too large. It covered 3 counties with a total of 19 wards where the population is widely dispersed. Besides, the research population was already clustered into groups called SHG which can readily serve as basic sampling units for selecting the sample clusters out of the entire population of interest.

A proportionate design was used to determine the number of groups to be randomly selected from the three counties where a proportion of 0.7 was selected from clusters in each county. Out of the 25 livestock trading groups in Garissa, 18 groups were selected randomly. In the same manner, 10 out of 14 groups was randomly sampled in Turkana while 7 out of eight 9 groups was randomly selected in Isiolo. This gave 35 groups (70%) out of the total 48 groups in the sampling framework.
Proportional sampling was further used to determine the number of respondents from clusters in each county. Hence, 115 respondents were selected from Garissa with a proportion of 0.42, 104 were chosen from Turkana with a proportion of 0.38 and 55 respondents were picked from Isiolo with the proportion of 0.2. The sample size in this case represented 30% of the research population. With the Margin of Error of 5% and Confidence Level of 95%, a sample size of 274 respondents was selected from a population of 940. The formula below describes the statistically computation applied to determine the number of respondents interviewed for this research.

\[ n = \frac{(z^2 \times p \times q) + (e^2)}{(e^2)} + \frac{((z^2 \times p \times q)/N)}{N} \]

\[ n = \frac{(1.96^2 \times 0.5 \times 0.5) + (0.05^2)}{(0.05^2) + ((1.96^2 \times 0.5 \times 0.5)/940)} \]

\[ = 274 \]

N = Population Size

n = Sample size

Z = critical standard score. (1.96)

P = population proportion.

q = 1-p

e = margin of error

In addition 7 key informants namely: 1 member of the KLMC executive; 3 member of CLMC (one from each county) and 3 members of local (LMA) were targeted for the key informant interviews.

3.4. Data Collection Methods

Collection of data was through face to face interviews using questionnaires developed on the basis of the research objectives. The reason for using face to face interview was because the majority target group didn’t have access to either phone or email communication and the few
that have access to phone services are not conversant with relevant applications to fill out the questionnaire digitally/electronically. The questionnaires were administered to REGAL-IR SHG engaged in livestock business with a help of trained enumerators. The use of interviewees was necessitated by the low literacy level of the respondents. The questionnaires used for this research had both closed and open ended questions. To overcome limitations related with language barrier, data collectors who speak the indigenous, Oromo, Somali, and Turkana language assisted in interviewing beneficiary in their respective counties. An interview guide was used for discussions with key informants. The outcome of the key informant interview was triangulated with result of the beneficiary interviews to validate and reinforce the findings.

An interview schedule was developed and shared with the selected clusters. The research objective and survey procedure were carefully explained to all group members to ensure transparency and avoid misunderstanding. Following the group briefings, respondents were selected using the pre-determined sampling techniques to identify the interview respondents. The face to face interview took place immediately after the selection of the respondents and it was conducted in a convenient venue (schools, church/mosque compounds, village/ward administration) premises.

3.5. Research Procedure

The survey questionnaire used in this research was developed based on the research objectives. Furthermore, development of the interview questionnaire considered the population's age, education, and attention span. Accordingly, a brief questionnaire which is simple to understand by adult rural residents with low literacy level but appropriate for gathering all relevant information was developed for this research. Both open and close ended questions were included in the questionnaire following a logically flow which begun with an introduction and end with a closing. The research enumerators were REGAL-IR community facilitators who were given half a day orientation training to acquaint them with the research objective, interview procedure, and details of the research questionnaire. Pilot testing of the questionnaire were conducted to evaluate the specific questions, format, question sequence and instructions prior to use in the main survey.
3.6 Data Analysis Methods

The data collected were analyzed to give key findings of the study. The analysis looked into frequencies, means and assessed cause and effect relationships using regression analysis. The information gathered from the respondents were triangulated by in-depth interviews of the key informants. The results were presented in the form of descriptive and inferential statistics, including graphs, pie charts, and frequencies in form of percentages.

The data were analyzed using Statistical Package for Social Scientists (SPSS 21 for Windows) to perform complex analysis of the data collected. Regression and correlations analysis as well as ANOVA (Analysis of Variance) were conducted using the SPSS package. This was aimed at establishing the relationship between the dependent variable (performance of smallholder livestock producers in ASALs) and the other co factors. Tables, charts, and graphs were generated using Microsoft Office Excel 2008.

3.7 Chapter Summary

The research design for this study was descriptive method. Participants answered questions administered through interviews using questionnaire. The interview respondents were randomly selected through a two stage cluster sampling design from a sampling frame which was a list of smallholders supported through livestock business star-up activities by REGAL-IR in Garissa, Isiolo, and Turkana. A total of 35 groups (70%) were randomly selected out of a total 48 groups in the first stage sampling. 247 beneficiaries were selected from a population of 940 using simple random sampling in the second stage sampling. The data collected were analyzed to give key findings of the study. The analysis looked into frequencies, means and assessed cause and effect relationships using regression analysis. The results were presented in the form of descriptive and inferential statistics, including graphs, pie charts, and frequencies in form of percentages.

In Chapter four, the study findings are presented in line with the research objectives. Demographic findings was presented first, followed by findings on the socio – economic causes contributing to the poor market performance of smallholder. Analysis of institutional and policy arrangements limiting the market engagement of the pastoralists in ASALs of Kenya is discussed at the end.
CHAPTER FOUR

4.0 RESULTS AND FINDINGS

4.1 Introduction

This chapter presents the study findings based on research questions. The study respondents’ demographic findings is presented first, followed by findings on the socio–economic causes contributing to the poor market performance of smallholder; followed by analysis of institutional and policy arrangements limiting the market engagement of the pastoralists in ASALs of Kenya. The study findings are presented using Tables and Figures.

4.2 Demographic Information

The demographic for this study included gender and livestock ownership. Demographic findings are presented in the subsequent sections.

4.2.1 Response Rate

The sample size for this study was two hundred ninety-four (274) respondents. Out of the 274 questionnaires given out, two sixty-nine (269) were fully filled, giving a response rate of 98% which was reliable.

4.2.2 Reliability Analysis

For a study to be reliable, it has to have a Cronbach Alpha should be between 0 & 1. This study had a Cronbach Alpha of 0.323. Table 4.1 presents a summary of the scales used to determining critical elements covered in the questionnaire.

Table 4.1 Reliability Analysis

<table>
<thead>
<tr>
<th>Reliability Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach’s Alpha</td>
</tr>
<tr>
<td>Cronbach’s Alpha Based on Standardized Items</td>
</tr>
<tr>
<td>N of Items</td>
</tr>
</tbody>
</table>

Item interrelation matric indicates that access to loans and credit facilities sub-scale appeared to have good consistency, $\alpha = 0.323$. The item worthy of retention were, frequency of the use
of bank account and access to loans and credit facilities because if they are deleted, it will lead to reduction in Cronbach’s alpha value to ($\alpha=0.116$ AND $\alpha=0.254$) respectively. Details of the Inter-Item Correlation Matrix are presented in Table 4.2 below.

Table 4.2 Inter-item Correlation Matrix

<table>
<thead>
<tr>
<th>Inter-Item Correlation Matrix</th>
<th>Would you take loan if you have access</th>
<th>How often do you use bank accounts</th>
<th>Access to loan and credit facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would you take loans if you get a chance</td>
<td>1.000</td>
<td>.062</td>
<td>.149</td>
</tr>
<tr>
<td>How often do you use bank accounts</td>
<td>.062</td>
<td>1.000</td>
<td>.222</td>
</tr>
<tr>
<td>Access to loan and credit facilities</td>
<td>.149</td>
<td>.222</td>
<td>1.000</td>
</tr>
</tbody>
</table>

4.2.3 Classification of Respondent by Gender

The findings of the study indicates that while majority of the respondents were men (70%), the remaining (30%) survey participants as women as presented in Figure 4.1 below.

Figure 4.1: Classification of Respondent by Gender
4.2.4 Livestock Ownership

Livestock ownership among the respondents ranged from a minimum of 3 heads of assorted livestock species to 525 animals as a maximum number of livestock owned. The average number of livestock owned is 67.13. Table 4.3 presents details on the number of livestock owned by the survey participants.

Table 4.3 Number of Livestock Owned

<table>
<thead>
<tr>
<th>NUMBER OF LIVESTOCK OWNED</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>67.13</td>
</tr>
<tr>
<td>Mode</td>
<td>30</td>
</tr>
<tr>
<td>Minimum</td>
<td>3</td>
</tr>
<tr>
<td>Maximum</td>
<td>525</td>
</tr>
</tbody>
</table>

Poultry represents the highest number of livestock owned with households rearing up to 48 chicks on average. Small ruminants are the other extensively reared species with goats representing the second highest number of species kept at 43 heads per household in average followed by sheep with a mean value of 19 animals per family. On the other hand, fewer Camels (10 heads of animal) are kept by the respondents in average followed by other species (9 heads of animal) including pigs and ducks among others and donkeys which are fewer in number (3 heads of animals). The findings are shown in Table 4.4 below.

Table 4.4 Number of Livestock Owned by Species

<table>
<thead>
<tr>
<th>NUMBER OF LIVESTOCK OWNED BY SPECIES</th>
<th>GOATS</th>
<th>SHEEP</th>
<th>CATTLE</th>
<th>CAMELS</th>
<th>DONKEYS</th>
<th>POULTRY</th>
<th>OTHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>43</td>
<td>19</td>
<td>9</td>
<td>10</td>
<td>3</td>
<td>48</td>
<td>9</td>
</tr>
<tr>
<td>Mode</td>
<td>50</td>
<td>10</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>10</td>
<td>9</td>
</tr>
</tbody>
</table>

4.3 Socio-economic Factor Affecting Market Participation of Smallholders

4.3.1 The Role of Women in Livestock Production

The study found out that women are involved in a variety of livestock production activities. Among the survey respondents, 46% identified milking as a major role played by pastoralist
women. While women have no or limited role in grazing (3%) and treating (1%) of livestock, they play a significant role in watering animals (36%). Figure 4.2 below designates the findings on role of women in livestock production.

**Figure 4.2: The Role of Women in Livestock Husbandry**

![Bar Chart showing the role of women in different livestock activities]

### 4.3.2 Gender Roles and Decision Making on Livestock Resources

The finding of the study shows that men maintain a notable upper-hand in making decisions regarding access and ownership of livestock assets. While 78% of the respondents indicated that men make the ultimate decision on the type and number of livestock to keep, only 13% described women as sole decision makers. In the same manner, while 65% of the interviewees responded that women make no decisions on the type and number of livestock to keep, a very small margin of 6% answered that men have no role in deciding the type and number of livestock owned which represents cases in female headed households. Figure 4.3 presents the summary findings on the decision making on the type and number of livestock owned by the survey respondents.
A regression analysis was conducted on the ownership and decision making power of men and women and the total number of the livestock to keep or sale. The model predicts that male headed households or households where men have the upper hand in decision making, tend to sale more livestock ($\beta = 0.071 \ t = 1.037$) as compared to women headed where women make ultimate decision on the sales of livestock. The findings are presented in Table 4.5.

**Table 4.5: Regression Analysis on Ownership and Decision Making Power of men and Women**

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>56.438</td>
<td>17.545</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>MEN</td>
<td>2.443</td>
<td>0.209</td>
<td>3.076</td>
<td>.002</td>
</tr>
<tr>
<td>WOMEN</td>
<td>0.581</td>
<td>0.071</td>
<td>1.037</td>
<td>.300</td>
</tr>
</tbody>
</table>
4.3.3 Participation of Smallholders in Livestock Value Chain

The respondents indicated goats as highly traded livestock species with households selling up to a maximum of 150 heads of animals per year while cattle and donkeys are the next livestock species sold in large numbers respectively. The finding showed that camels generally are the less traded species of livestock in ASALs. The average number of goats sold per household per year, is equivalent to 14 head of goats followed by cattle, camels and donkeys having an equivalent mean value of 3 heads of animal sold per household per species per year. Table 4.6 shows the number of livestock sold per species year.

Table 4.6 Number of Livestock Sold per Year

<table>
<thead>
<tr>
<th>NUMBER OF LIVESTOCK SOLD PER YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>CATTLE</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>Maximum</td>
</tr>
<tr>
<td>Sum</td>
</tr>
</tbody>
</table>

4.3.4 Factors Influencing the Decision to Sales Livestock

Several factors influence smallholders’ decision to sell livestock. These include illness of livestock, drought, aging and maturity and family emergencies among others. Majority (33%) of the study respondents indicate drought as a major trigger for destocking followed by sickness (24%) and other family reasons (17%) as shown in the figure below. It has also be specified that sickness and weight loss due to drought results in distress sales and hence limits the bargaining power of the respondents to effectively engage in livestock value chain. In other words the prices fetched during drought times are lower than the normal times. Figure 4.4 below contains the details of the responses.
4.3.5 Frequency of Market Visit

Majority (55%) of the community interview participants indicated that they visit the livestock markets on monthly basis while 33% responded that they visit livestock markets on weekly basis. The remaining 12% do visit livestock market on yearly basis. On further discussion with the respondents, it became apparent that those who visit the livestock market less frequently are deterred by the distance and poor road conditions to access the livestock markets. Besides, the monthly visit to the livestock market by majority of the respondents is made with intention to sell their livestock with better price at the month end where salaries are disbursed and consumers are perceived to have adequate disposable income to spend. The findings are indicated in Figure 4.5 below.

Figure 4.5: Frequency of Market Visit
4.3.6 Determinants of Livestock Prices

Several factors influence the price of livestock in the areas covered by the study. The health condition of the animal is the primary factor at 31% response rate followed by body size 27%, demand and supply factors at 25% and finally seasonal market variation at 17%. However, further discussion with the respondents revealed that body size and livestock health conditions vary depending on the season. In other words, the more rainfall and grass available, the heavier and healthier the livestock becomes. The demand and supply relationship is also an important market price determinant in that, the higher the demand for live animals, the higher the price and the vice versa. However, the supply of livestock to meet periodic market demand is also determined by the seasonal factors and hence the two parameters are similarly interdependent. Figure 4.6 below shows the findings of the study.

Figure 4.6: Factors Determining Animal Price

![Factors Determining Animal Price](image)

4.3.7 The Role Middle Men in the Livestock Market

As it can be noted from Figure 4.6 below, almost all the respondents (96%) interviewed during the study sell their livestock to middlemen who would in turn trade the animals at a terminal market while only a small portion (4%) of the respondents sell their animals directly to the consumers. The involvement of middlemen limits the effective engagement of smallholder producers in livestock value chain and also limits their ability to obtain maximum price from the sales of their livestock.

Figure 4.7: The Role Middle Men in the Livestock Market
There is a non-significant negative linear relationship in price received for sale of livestock and the pastoralists who sold to brokers (\(\rho = -0.056\ p > 0.05\)). This means that those pastoralists who sell to brokers receive a lower price than those who sell their livestock directly to consumers.

**Table 4.7: Relationship between Prices Received for Sale of Livestock and Pastoralist Who Sold to Brokers**

<table>
<thead>
<tr>
<th>Sell to Middlemen</th>
<th>Correlation Coefficient</th>
<th>Price Received for Livestock</th>
</tr>
</thead>
<tbody>
<tr>
<td>-.056</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.361</td>
<td>Sig. (2-tailed)</td>
<td></td>
</tr>
</tbody>
</table>

The regression analysis significantly predicts that a pastoralist selling to a broker will receive a lower price by 0.037 shillings for each animal sold to a broker than when he sells directly to a buyer.

**Table 4.8: Regression Analysis of Sale Price of Livestock and Broker**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>4969.412</td>
<td>552.942</td>
<td>8.987</td>
</tr>
<tr>
<td></td>
<td>Sell to a broker</td>
<td>-318.039</td>
<td>526.666</td>
<td>-.037</td>
</tr>
</tbody>
</table>
4.3.8 Smallholders Access to Market Information

The study findings showed sources ranging from informal sources such as friends and relatives to a formal means including radio and TV broadcasts as sources of market information available smallholder producers in ASALs of Kenya. Thus, while 39.2% of respondents indicated that they receive market information from friends and relative, 23.4% solicit price information from market actors such as brokers using phone calls or text messaging. Additionally, 19.2% access market information through radio broadcast whereas a small proportion of 3.4% receive market information through televisions. The study further revealed that larger proportion (64.6%) of the respondents receive skewed market information from secondary sources (brokers and friends), which limits their ability to make informed decisions to effectively engage and benefit from their participation in livestock value chain. Figure 4.8 below shows the sources of market information available smallholder producers in ASALs.

Figure 4.8: Available Source of Market Information

<table>
<thead>
<tr>
<th>Source of Information</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio</td>
<td>19.2%</td>
</tr>
<tr>
<td>Phone(SMS)</td>
<td>23.4%</td>
</tr>
<tr>
<td>Friends and Relatives</td>
<td>39.2%</td>
</tr>
<tr>
<td>Television</td>
<td>3.4%</td>
</tr>
<tr>
<td>Others</td>
<td>14.8%</td>
</tr>
</tbody>
</table>

4.3.9 Influence of Market Information on Livestock Sales Decision

According to the survey respondents, market information remarkably influences smallholders’ decision to sale their livestock. As described in Figure 4.9 below, 33.6% of the community members interviewed indicated market information to be extremely influential in their sales decision, while 19% felt it’s moderately influential followed by 14.5% that described market information as extremely pivotal in making decision regarding the sales of
livestock. Limited number of respondents categorized the importance of market information as slightly influential (15.2%) and not influential (17.6%).

**Figure 4.9: How Information Influence Decision Making to Sell**

As discussed under section 4.6.1 constraints in terms of accessing accurate and regular price information restricts the bargaining power of producers and limited their opportunities to successfully participate in livestock trade. This is further substantiated by the results of the correlation analysis between price information and number of livestock sold which is statistically significant. As per the study findings, the number of livestock sold was found to be positively correlated with the price information (rho =0.115, p=0.05). This reveals that as pastoralists get more reliable information about price of the livestock they decided to sale more livestock than when the price information is unreliable.

**Table 4.9: Relationship between Price Information and Number of Livestock Sold**

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Total Number of Livestock Sold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source of Price information</td>
<td>Correlation Coefficient</td>
</tr>
<tr>
<td></td>
<td>.115</td>
</tr>
<tr>
<td>P-value</td>
<td>.05</td>
</tr>
</tbody>
</table>


4.4 Institutional and Policy Factors Affecting Market Participation of Smallholders

4.4.1 Factor Affecting Smallholders Choice of Livestock Market

The study revealed that 48% of the respondents choose livestock markets based on distance or accessibility. Another 11% of the interview participants indicated their choice of a livestock market as being influenced by the demand for live animals in a particular market. It's also important to note that livestock price is not ranked as the major determinant (26%) in choosing the markets to be visited. As it was discussed in earlier sections, this is mainly attributed to lack of access to reliable market information which limits the ability of smallholders to choose livestock market based on prevalent market prices.

Figure 4.10: Factors Influencing Choice of Market

4.4.2 Distance to Livestock Market

The study findings indicated in Table 4.10 shows that the estimated distance travelled by the smallholder livestock producers to access livestock markets ranges from a minimum of 1 Km to a maximum of 136 KMs. The respondents travel an average of 25.35 KM to access livestock market. Table 4 details the distance traveled to a nearby livestock markets.

Table 4.10: Distance to Livestock Market

<table>
<thead>
<tr>
<th>DISTANCE TO THE MARKET</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>25.35 Kilometers</td>
</tr>
<tr>
<td>Mode</td>
<td>7 Kilometers</td>
</tr>
<tr>
<td>Minimum</td>
<td>1 Kilometers</td>
</tr>
<tr>
<td>Maximum</td>
<td>136 Kilometers</td>
</tr>
</tbody>
</table>
4.4.3 Movement of Livestock to the Market

The study further found out that majority of the respondents (73%) trekked their livestock to the nearby market whereas relatively small proportion (23%) carry their livestock by vehicles as indicated Figure 4.11 below.

**Figure 4.11: How Livestock Get to the Market**

![Graph showing how livestock get to the market. 73% trek to the market, 27% are carried by vehicle.]

A correlation analysis was run to determine relationship between the distance to the market and the number of livestock sold. The results of the test were statistically significant and the number of livestock sold was found to be negatively correlated with the distance covered to the market (\( \rho = -0.148, p < 0.05 \)) as shown in the Table 4.11 below.

**Table 4.11 Correlation between Distance to Livestock Market and Number of Livestock Sold**

<table>
<thead>
<tr>
<th>Correlations</th>
<th>TOTAL NUMBER OF LIVESTOCK SOLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISTANCE TO THE MARKET</td>
<td>rho</td>
</tr>
<tr>
<td></td>
<td>P-value</td>
</tr>
</tbody>
</table>

A simple linear regression was calculated to predict number of livestock sold based on the distance to the market. A significant regression equation was found (\( F (1,258) = 5.339, p < 0.05 \)).
Table 4.12: Regression on Number of Livestock Sold and Distance to Market

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.142</td>
<td>.020</td>
<td>.016</td>
<td>12.305</td>
</tr>
</tbody>
</table>

Table 4.13: ANOVA of Number of Livestock Sold and Distance to Market

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>808.429</td>
<td>1</td>
<td>808.429</td>
<td>5.339</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>39063.859</td>
<td>258</td>
<td>151.410</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>39872.288</td>
<td>259</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results predicted that the number of livestock sold is equal to $\hat{y} = 48.204 - 0.062$ (distance to the market) when distance is measured in Kilometers. Number of livestock sold decreased for every 0.062 Kms extra distance traveled to access livestock market.

Table 4.14: Coefficients of Number of Livestock Sold and Distance to Market

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>48.204</td>
<td>1.021</td>
<td></td>
<td>47.189</td>
</tr>
<tr>
<td>Distance to the market</td>
<td>-.062</td>
<td>.027</td>
<td>-.142</td>
<td>-2.311</td>
</tr>
</tbody>
</table>
The findings on inaccessible livestock markets as a factor restricting engagement of smallholders with terminal markets along the value chains is further demonstrated by scattered plots with regression lines displayed in Figure 4.12 below.

**Figure 4.12: Number of Livestock Sold and Inaccessible Markets**

![Graph showing number of livestock sold vs. distance to market](image)

**4.5 Best Practices for Adoption to Overcome Market Barriers in ASALS of Kenya**

**4.5.1 Access to Loan and Credit Facilities**

The survey result indicated that only 9.7% of the respondents have consistent access to financial services while 5.6% only has frequent access to loan and credit facilities. Furthermore, while 51% has never had access to any source of loan while 26.0% maintain intermittent access to financial services. In addition, 60.5% of the respondents have never opened a bank account while 17.8% of the respondents sometimes use a bank. Only a few proportion (6.5%) occasionally use a bank while 10.3% of the interview respondents indicated that they always use banks. Figure 4.13 below displays details breakdown of respondent’s access to loans and credit facilities.
4.5.2 Local Institutions Providing Short Term Loans

As per the study finding displayed in Figure 4.14, only 7.9% of the respondents receive loans from banks while 8.9% of the smallholders interviewed obtain loans from friends and family networks. Majority (44.6%) of the loans available to the respondents are provided through Village Saving and Lending (VSL) or table banking groups while the next main source of cash loans (33.6%) comes from Non-Governmental Organizations (NGOs) in the form revolving fund or cash grants.

4.5.3 Amount of Loan Borrowed in the Last Five Years

More than 30% of the survey respondents indicated that they would never take loan even if they get access while 37.2% responded that they would sometimes take loans. Another
20.6% replied that they would be keen to access loans at all times. The survey finding further showed that there is major lack of awareness on the role of credit in catalyzing livestock trade and widespread reluctance towards borrowing. As indicated in Table 4.15 below, the average amount of loan borrowed over a period of five years is Kshs. 37,447. Very limited number of respondents who has access to formal financial institutions borrowed up to a maximum amount of Kshs. 300,000.

**Table 4.15: Amount of Loan Borrowed in the Last Five Years**

<table>
<thead>
<tr>
<th>AMOUNT OF MONEY BORROWED IN LAST FIVE YEARS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>Kshs. 37,447</td>
</tr>
<tr>
<td>Minimum</td>
<td>Kshs. 120</td>
</tr>
<tr>
<td>Maximum</td>
<td>Kshs. 300,000</td>
</tr>
<tr>
<td>Sum</td>
<td>Kshs. 3,482,540</td>
</tr>
</tbody>
</table>

**4.5.4 Use of Mobile Platform (Mpesa)**

As indicated in Figure 4.15 below, almost all (99%) of the interview respondents use cash for transactions at livestock markets. Mobile money (Mpesa) services are nonexistent in remote rural markets owing to the significant operating challenges. These include intermittent signal coverage and liquidity management. The cash based transaction practiced by the smallholder livestock producers exposes the pastoralists to risks of theft and banditry and hence they prefer to liquidate (sale) limited number of livestock so that the threats of losing their cash are minimized.

**Figure 4.15: Use of mobile platform (Mpesa)**
4.5.5 The Influence and Significance of Livestock Marketing Association

Majority (57%) of the survey respondents indicated that they do have Livestock Marketing Associations (LMAs) in their locality. The remaining 24% replied that they do not have an LMA in their locality while 19% of the respondents seem not to have any idea about the existence LMAs. Furthermore, 78% of the respondents indicated that the LMA leadership are nominated through a regular election while 22% felt that no regular elections are conducted to appoint the LMA executives. The responses from the community interviews agree with the findings of the key informant interviews that essentially highlighted that most of the livestock marketing associations were formed in most of the Kenyan ASAL counties between the years 2011 and 2015 with an objective to increase the participation of smallholder producers in livestock value chain through presenting interests of livestock farmers to the policy and decision making bodies; providing market and price information to pastoralists and building the capacity of their members in livestock production and marketing. The key informant interview results also indicate that all the LMAs have elected members of up to 13 individuals and a constitution governing their operations. Figure 4.16 below shows the findings on the availability of functional LMAs.

Figure 4.16: Availability of Livestock Marketing Association

<table>
<thead>
<tr>
<th>DO YOU HAVE A LMA IN LOCALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
</tr>
<tr>
<td>NO</td>
</tr>
<tr>
<td>DONT KNOW</td>
</tr>
<tr>
<td>57%</td>
</tr>
<tr>
<td>24%</td>
</tr>
<tr>
<td>19%</td>
</tr>
</tbody>
</table>

4.5.6 The Role of Livestock Marketing Association

The roles of Livestock Marketing Association analyzed through this survey includes training of individual LMA members, provision of market information, advocacy for better livestock policies and services and management of livestock market. Further assessment of the
satisfaction of smallholders on the service provided livestock market association was conducted and results provided. To further qualify the respondent’s satisfaction on the services provided by LMAs, the outcomes of the community interview was triangulated with the result of the Key Informant Interview against the different roles played by LMAs.

More than 90% of the survey respondents recognized the role played by their respective LMAs in providing livestock price information to its members with only 7.8% disputing this role. However, while only 45.3% of the community members interviewed considered that role of LMAs in providing market information as strong, 46.9% of the respondents described it as weak. The key informant interview findings corresponds with the outcome of the community interview on the role of LMAs in providing market information. The respondents, most of whom are members of the county and local LMAs, admitted their shortcomings in providing reliable price information to their members on regular basis and cited lack of institutional capacity to meet the expectations of their members in this regard. The findings on the respondents rating of the LMAs role in providing price information is shown in Figure 4.17 below.

**Figure 4.17: The Role of LMAs in Provision of Market Information**

Similar to the role LMA’s play in providing market information, their advocacy role in formulation of favorable livestock policies as well as provision of improved livestock services is widely recognized by the survey respondents. 48.7% of the respondents indicated that LMAs play a major role in advocating for better policy and livestock services while 41.6% felt that the LMAs effort in this regard to be weaker.
The key informant interview respondent members of the livestock marketing council executives indicated that the higher organ of the livestock marketing associations (which is KLMC) has been involved in advocating for the rights of the pastoralists. An interview with a KLMC member also indicated that as a national level structure of the smallholder livestock producers, it has been negotiating for better policies in the ASAL areas and it has been working closely with Pastoralists Parliamentary Group (PPG) in order to lobby for favourable livestock policies. Besides, KLMC was involved in the advocacy for better infrastructure development for the pastoral facilitated livestock policy review, participates and represents pastoralists in all livestock related forums and research.

However, the executive members admitted shortcomings in giving feedback and cascading the efforts made by KLMC at the national level to members at the grassroots hence the misperception by the grassroots members regarding the roles played by the livestock marketing associations at various levels. Figure 4.18 below describes the respondents opinion on the role of LMA’s in Advocacy.

**Figure 4.18: The Role of LMAs as Advocate for Better Services**

<table>
<thead>
<tr>
<th>STRENGTH OF ROLES</th>
<th>RESPONSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>11.9%</td>
</tr>
<tr>
<td>STRONG</td>
<td>47.5%</td>
</tr>
<tr>
<td>WEAK</td>
<td>40.7%</td>
</tr>
</tbody>
</table>

**4.5.7 Role of LMAs in Management of Livestock Markets**

Another role of the LMAs that was discussed during the community interview was management of livestock market infrastructures. Whereas 48.7% of the respondents believed that the role played by the LMAs in management of livestock market to be strong, 41.6% of the respondents felt that the livestock market management roles of the LMAs to be weak.
The remaining 9.7% of the interview participants responded that the LMAs don’t play any role in managing the livestock markets.

The livestock marketing association executives agreed their role in managing the livestock market to be inadequate. The key informants attributed the limitations to lack of resources and legislative framework that supports their role in the management of livestock markets. At present, the only source of revenue for the LMAs is member’s contribution with an average of 200 Kenya shillings annually. In addition, there is no legislative framework that underpins the role played by LMAs in management of livestock markets. The key informants further explained that despite the role played by LMAs in the management of livestock market, none of the revenue generated in taxations goes to the LMAs as the sales levies are entirely collected by county governments.

Figure 4.19: The Role of LMAs as Advocate for Better Services

4.5.8 Overall Satisfaction Rate of the Services Provided by LMAs

As discussed in the earlier sections, the overall satisfaction of the smallholders with the roles played by LMAs is varied from weak to strong as well as non-existent. According to Figure 4.20 below majority (28.8%) of the respondents felt that the overall services provided by LMAs to be moderately satisfactory while another 24.5% indicated that it’s slightly satisfactory. On the other hand, 23.3% of the interview participants responded that they are completely satisfied with the role of LMAs while only 14.4% indicated that they are very satisfied with LMAs.
This is an indication that there is an unmet demand by the smallholders in terms of the services provided by their respective LMA, a fact that is recognized by majority of the LMA executives as indicated during the key informant interviews. According to the CLMC and KLMC officials, absence of policy governing coordination of LMAs and county government, unfavorable legislative framework at county level, poor road networks and poorly structured markets and absence of adequate livestock related enterprise development program are the factors limiting the performance of LMA in advancing the interests of smallholders.

To overcome the limitations in terms of the LMAs engagement in management of livestock markets, the KLMC officials suggested adoption of the co-management model throughout the ASALs. The co-management model, the officials argued, allows for a partnership between the county governments and the livestock marketing associations in management of the livestock markets and in promoting livestock related services. The officials further suggested for binding mutual agreement that enables both parties share the revenues collected from the livestock markets on a 50-50 basis. The income from shared revenue is used to promote livestock marketing and provide required services to smallholders.

**Figure 4.20: Overall Satisfaction Rate of the Services Provided by LMAs**

<table>
<thead>
<tr>
<th>SATISFACTION WITH SERVICES OF LMAs</th>
<th>9.4%</th>
<th>24.5%</th>
<th>28.8%</th>
<th>14.4%</th>
<th>23.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT SATISFIED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLIGHTLY SATISFIED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MODERATELY SATISFIED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VERY SATISFIED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPLETELY SATISFIED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**4.5.9 The View of Smallholders on Key Challenges against Market Engagement**

At the conclusion of the community interview, each respondent was asked an open ended question to list the various factors believed to have hampered small-scale livestock
production and marketing. The interview participants were also requested to suggest solutions to overcome the hurdles. The challenges listed range from natural causes such as drought and diseases to manmade challenges including security/cattle raiding and poor infrastructure as bottlenecks limiting the participation of smallholders in value chains. Respondents also suggested various solutions to be spearheaded by state and non-state actors as well as livestock marketing association. The details are shown in the Appendix IV.

4.5.10 View of Key Informants on Key Challenges against Market Engagement

Similar to the community interview participants, the key informants were also asked to express their views on the strategic focus to improve the market engagement of smallholders in livestock value chain, propose appropriate interventions and list the role of each stakeholders. The suggested area of focus includes policy and institutional reforms, capacity building initiatives as well as economic opportunities targeting smallholders. The Key informant’s respondents also listed key players to intervene in the different areas of strategic focus prioritized for action. Summary of the outcome of an open ended discussion with the key informants is presented in Appendix III.

4.5.11 Best Livestock value Chain Intervention for replication in ASALs

The best practice experiences that the interview respondents were keen to learn and replicate in ASALs of Kenya includes both interventions in the production of livestock as well as activities promoting livestock marketing. The respondents were interested in adopting efficient marketing strategies for their livestock products since they perceive the middlemen to be extorting them by buying product at low prices. The findings indicated that respondents prefer the Livestock Management Association to develop marketing strategies to help sell the products at reasonable prices to benefit the smallholder farmers in ASALs of Kenya.

In addition, successful interventions in sustainable management of grazing and water resources at the grassroots and affordable provision of veterinary supplies and inputs were suggested as preferred best practice experiences to be coopted from elsewhere. The respondents indicated that the management of grazing and water resources were poor and often led to conflicts among the community members. The respondents suggested that
Livestock Management Association should help protect and manage grazing and water resources for the community, which will help improve livestock production for the farmers.

4.6 Chapter Summary

This chapter presented the study findings based on research questions. The first section represented the findings of the demographic of the respondents, this was followed by findings on the socio–economic causes contributing to the poor market performance of smallholders. The third section looked at the analysis of institutional and policy arrangements limiting the market engagement of the pastoralists in ASALs of Kenya and finally, the findings on the best practices that needs to be adopted. The study findings are presented using Tables and Figures. Chapter five will present a summary of the study discussions, conclusion, and recommendations.
CHAPTER FIVE

5.0 DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter presents the study discussion, conclusion and recommendation on the challenges against market participation of smallholder livestock producers in ASALs of Kenya-The case of REGAL-IR, a USAID funded resilience and economic growth program in Arid land Kenya. Discussions, conclusion, and recommendations are structured according to the research objectives. Summary of the study is presented first, followed by discussions as per research objectives followed by conclusion, and recommendations.

5.2 Summary of the Study

The purpose of this study was to determine challenges against market participation of smallholder livestock producers in ASALs of Kenya. The research objectives for the study were: to examine the socio – economic causes for the poor market performance of smallholder livestock producers in ASALs; Analyze institutional and policy gaps limiting market engagement by smallholder livestock producers in ASALs of Kenya; Assess best practices for adoption to overcome market barriers to smallholder livestock producers in arid lands of Kenya.

This study utilized an explanatory research design. The study population was 940 smallholder livestock producers supported by REGAL-IR in ASALs of Kenya. The sample size of the study was 274 smallholder livestock farmers in Isiolo, Turkana, and Garisa Counties. A proportionate sampling was used to determine the number of interview respondents. Structured questionnaires with both closed and open ended questions were administered through an interviewer for data collection, while data analysis was done using computer program. A total of 274 questionnaires were administered and two sixty-nine (269) were fully filled, giving a response rate of 98%. Descriptive statistics utilized to analyze the research findings included frequencies, mean, correlations, and regression. The study findings were presented using Tables and Figures.
The first research question was set to establish socio-economic factors affecting market participation of smallholders and this was done by analyzing gender roles, livestock value chain as an opportunity for smallholders and access to market information as key factors affecting smallholders’ engagement with livestock markets. The research findings indicated that men maintain the upper hand in livestock ownership and decision regarding the sales of livestock (76%). A regression analysis conducted on the decision-making power of men and women in determining the number of livestock sold predicted that male headed households tend to sale more livestock ($\beta =0.071t = 1.037$) as compared to women headed households. The research also determined that middle men, who purchases 96% of the livestock from the primary producers, are the major deterrents to smallholders’ successful engagement with livestock markets.

The study indicated a significant negative linear relationship in price received for sale of livestock and the involvement of middlemen ($\rho=-0.056 p> 0.05$). The research outcome further demonstrated that access to market information plays a major role in smallholders’ engagement with markets. 67.1% of the respondents indicated that access to market information to have moderate to extremely strong influence on successful engagement of smallholders. The research also showed that number of livestock sold was positively correlated with the price information ($\rho =0.115, p=0.05$) in that as pastoralists get more reliable information about price of the livestock they tend to sale more livestock and receive better rewards compared to a situation where they lack dependable price information.

The second research objective examined the extent to which policy and institutional factors influence smallholder’s participation in livestock markets. Access to livestock markets, availability of financial services accessible to smallholders in ASALs as well as the role of livestock marketing associations were analyzed under this objective. (73%) of respondents indicated that they trek 23.5 km in an average to livestock markers. Hence, remoteness of livestock market was indicated as a major deterrent to smallholder’s engagement with livestock markets. The survey further indicated that linear relationship exists between distance to market and the number of livestock sold where the number of livestock sold was found to be negatively correlated with the distance covered to the market ($\rho =-0.148, p<0.05$). Similarly, the study demonstrated that only 9.7% of the respondents have consistent...
access to financial services while only 5.6% has frequent access to loan and credit facilities. Absence of policy governing the relationship between the LMAs and county government was described as a major gap in policy framework. Furthermore, lack of enabling environment to implement a co-management model in livestock production has limited the revenue base and service delivery by LMAs.

The third research objective to determine the best practices for adoption to overcome market barriers in ASALS of Kenya the survey result indicated that only 9.7% of the respondents have consistent access to financial services while 5.6% only has frequent access to loan and credit facilities. On issues of local institutions providing short term loans only 7.9% of the respondents receive loans from banks while 8.9% of the smallholders interviewed indicate that they obtain loans from friends and family networks. The survey determined that more than 30% of the respondents would never take loan even if they get access while 37.2% would sometimes take loans. Another 20.6% replied that they would be keen to access loans at all times.

The average amount of loan borrowed over a period of five years was Kshs. 37,447. Very limited number of respondents who has access to formal financial institutions borrowed up to a maximum amount of Kshs. 300,000. It was established that almost (99%) of the interview respondents use cash for tractions at livestock markets. Mobile money (mpesa) services are nonexistent in remote rural markets owing to the significant operating challenges. Majority (57%) of the survey respondents indicated that they do have Livestock Marketing Associations (LMAs) in their locality whereas 48.7% of the respondents believed that the role played by the LMAs in management of livestock market to be strong. Overall satisfaction rate of the services provided by LMAS and only 23.3% of the interview participants responded that they are completely satisfied with the role of LMAs while only 14.4% indicated that they are very satisfied with LMAs.
5.3 Discussion

5.3.1 Socio-Economic Factors Limiting Stallholders Market Participation

The findings of the study indicate inverse relationship between successful market engagement of smallholder livestock producers’ and socioeconomic factors namely gender relations in the household, complexity of value chains/value chain actors and access to reliable market information currently prevailing in ASALs of Kenya.

The study finding also showed that poultry represents the highest number (48 chicks per household) followed by goats (43 heads per household) and sheep (19 animals per family). On the other hand, fewer camels are reared by smallholders in ASALs (10 heads of animal per household) followed by donkeys which are minimal in number (3 heads of animals per household). The research finding corresponds with Tully (2014), which puts the Kenyan livestock base at 60 million of which chicken is ranked the highest representing 48 million, followed by goats at 9 million heads, sheep at 7 million and rare species represented by Camel which is numbered 0.8 million and donkey at 0.52 million.

The study findings further demonstrated that irrespective of the livestock species owned, men household members are predominantly (78%) maintain the upper hand in livestock ownership while women rarely control and make decision on the sales of livestock. This conforms to a study conducted by Kipuri (2008) in East and Horn of Africa that revealed that pastoralist women have rarely been able to own and dispose of livestock independently of their male kin. Mulugeta (2014), further explains that despite their key role in livestock management, women’s contributions are undermined and their decision making power is highly limited.

The analysis regarding gender roles in livestock husbandry demonstrated that women are predominantly responsible for milking (46%) and watering of livestock (36%) while they have limited involvement in roles such as grazing of livestock (1%), treating of sick animal (3%) and building of animal shelter (14%) which are predominantly performed by men. The findings are in agreement with the research conducted by CARE (2014), which concluded that pastoralist women in northern Kenya primarily engage in tending small stock, watering and milking while men play an active role in herding & marketing.
A regression analysis conducted on the ownership and decision making power of men and women and number of livestock sold predicted that male headed households tend to sale more livestock ($\beta =0.071t = 1.037$) as compared to women headed households. This could be explained by the fact that female headed households are resource poor and has less livestock to dispose compared to male households. The findings correspond with study by Debela (2016), in Ethiopia which revealed that female headed households own significantly lower livestock assets than meal headed households. A similar study by Duku (2011), on the ownership of small ruminants in Ghana established that a higher proportion of female headed households have lower socio-economic status and less labor compared to male headed households and hence keep small number livestock.

According to the study findings, livestock price in the local markets is determined by the health condition of the animal (31%), followed by body size (27%), demand, and supply factors (25%) and finally seasonal market variation (17%). However, further discussion with the respondents revealed that body size and health are dependent on the season of the year while supply and demand also relates to seasonal variations indicating the interdependence of the different livestock price determinants. A conclusion can therefore be made that it is difficult to separate drivers of livestock prices in ASALs of Kenya and attribute the reason for price fluctuation to one single factor. The results correspond to the findings of Tully (2014), that determined that overall livestock market price is in Kenya is determined by a combination of market supply and demand, as well as seasonal changes which is interrelated in complex ways.

The study outcome indicated that irrespective of the season, almost all (96%) of the smallholder’s sale their livestock to middlemen whereas only 4% could bypass middlemen and sell directly to consumers. The study further revealed that smallholders selling their livestock to a middleman receive a lower price by 0.037 shillings for each animal sold to a broker than when they sells directly to a buyer. The finding confirms with the study conducted by Duncan (2008), in Samburu County in Kenya, which concluded that inefficiencies in the livestock value chain is caused by higher number of middlemen among other factors that inhibits livestock producers’ ability to realize maximum benefits from livestock trade.
Similarly, access to livestock market information has also been found to be one of the socio-economic parameters determining the effective participation of smallholders in livestock markets. The study revealed that to a larger extent (64.6%), smallholders lack access to regular and reliable market information but instead depend on secondary sources such as brokers and friends who provide them with skewed price figures. The research further indicated that the number of livestock sold to be positively correlated with the price information (rho =0.115, p=0.05). This reveals that as pastoralists got more reliable information about price they tend to sell more livestock and earn a better return than when the price information is unreliable. The finding of the study agrees with the finding of Karikuri (1996), which explains that low prices due to lack of market information limits effective participation by pastoralists in commercial livestock marketing in ASALs of Kenya.

5.3.2 Policy and Institutional Factors Limiting Smallholders Market Participation

The research finding showed that the prevailing institutional arrangement to have hampered the participation and benefit of the smallholders in livestock market. Among the different parameters analyzed, the result demonstrated that there exists a strong negative relationship between the remoteness of livestock markets and smallholders ability to successfully participate in livestock value chain. According to the findings of the survey, significant proportion (73%) of the smallholders in interviewed trek an average of 25.3 Km to access livestock markets which limits smallholder’s choice of livestock markets and their ability to sale their livestock with competitive prices.

A correlation analysis conducted indicated a statistically significant relationship between the number of livestock sold and the distance covered to the market (rho =-0.148, p<0.05). A regression analysis on the distance to the market and number of livestock sold predicted that the number of livestock sold is equal to = 48.204 – 0.062 (distance to the market) when distance is measured in Kilometers. Number of livestock sold decreased for every 0.062 kms more of distance to the market. The study findings are in agreement with a finding by Pavanello (2008) in ASALs of Kenya that concluded that long trekking distances to markets are a significant impediment to pastoralists’ ability to profitably sell their livestock. The result of the study is further supported by a findings by Bailey (1999), that determined that the long distances to the markets exposes smallholder producers to exit costs (costs of
returning with the animals if they are not bought), weakening their bargaining position and giving market powers to buyers. Omiti (2002), also concluded that one of the reason for the weak participation of pastoralists in commercial markets is partly because pastoral areas are remotely situated from major consumption centers while the transportation network is poor or nonexistent.

As per the study finding, only 7.9% of the smallholders interviewed receive loans from banks while 8.9% of the smallholders obtain loans from friends and family networks. The remaining 51% of the smallholders has never had access to any source of loan and 26% only had intermittent access to financial services. In addition, majority (44.6%) of the loans available to the smallholders in ASALs are provided through VSLs or table banking groups while the next main source of cash loans (33.6%) comes from Non-Governmental Organizations (NGOs) in the form of cash grants. The study finding is further strengthened by a study by Tully (2014) that describes that pastoralists in ASALs also lack sufficient located in the far-away urban centers and markets lack access to financial services, such as credit facilities.

The survey showed that (57%) of the respondents recognize the role and the presence of LMAs in their locality. There remaining 24% replied that they do not have an LMA in their locality while 19% of the respondents seem to have no idea about the existence LMAs in their locality. Similarly, 28.8% of the smallholders interviewed felt that the overall services provide by LMAs to be moderately satisfactory while another 24.5% indicated that it’s slightly satisfactory. On the other hand, 23.3% of the interview participants responded that that they are completely satisfied with the role of LMAs while 14.4% indicated that they are very satisfied with LMAs. The executives of KLMC and CLMC who participated during the KII admitted the gaps in service provision and cited lack of capacity as a reason for the shortcomings. This is an agreement with a study by AU-IBAR (2006), which concluded that livestock marketing associations' in ASALs of Kenya needs to be strengthened in areas of advocacy on policy orientation in favor of pastoral in providing market information and intelligence.
5.3.3 Best Practices for Adoption to Overcome Market Barriers to Smallholder Livestock Producers

To third determine the best practices for adoption to overcome market barriers in ASALS of Kenya, the survey result indicated that only 9.7% of the respondents have consistent access to financial services while 5.6% only has frequent access to loan and credit facilities. On issues of local institutions providing short term loans only 7.9% of the respondents receive loans from banks while 8.9% of the smallholders interviewed obtain loans from friends and family networks. Previous studies have indicated that lack of information limits farmers’ choice of what to produce, how much to sell, where to sell, and the prices they receive for their output. Small-scale producers in most developing countries lack price information which leads to market inefficiency (Svensson, 2009).

Smallholder livestock producers in ASALs of Kenya have intermittent access to a well-structured market information. Tully (2014), explains that pastoralists in ASALs of Kenya relied on various informal sources including local traders, family members and friends, as well as observing the market themselves to get price information. A study conducted by Pavalleno (2010), in Mandera County in Kenya, revealed that smallholders obtain livestock price information by contacting brokers via mobile phones.

The study also established that very limited number of respondents have access to formal financial institutions and that almost (99%) of the interview respondents use cash for tractions at livestock markets. Mobile money (mpesa) services are nonexistent in remote rural markets owing to the significant operating challenges. Munro (2012) established that best practice in disseminating market information among pastoralist communities in the Horn of Africa region can be replicated in ASALs of Kenya. A successful experience in ASALs of Ethiopia for instance could be implemented in ASALs of Kenya to help smallholders get reliable market information on regular and timely manner. The USAID has supported the Global Livestock Collaborative Research Support Program (GLCRSP) to create a National Livestock Market Information System (NLMIS) in Ethiopia.

He further added that the NLMIS aids Ethiopian pastoralists make better decisions on when to sell their livestock and earn increased income during times of economic hardship. The NLMIS collects and disseminates reliable and timely livestock market information to
producers, traders, processors, and consumers to promote greater participation in local and regional markets using the latest information and communication technology (ICT) via text message, website, or weekly radio broadcasts. Through the USAID-supported NLMIS, pastoralists can monitor livestock prices and demand at distant markets and make better choices on when and where to sell livestock (Munro, 2012).

As per the study majority (57%) of the survey respondents indicated that they do have Livestock Marketing Associations (LMAs) in their locality whereas 48.7% of the respondents believed that the role played by the LMAs in management of livestock market to be strong. Overall satisfaction rate of the services provided by LMAS and only 23.3% of the interview participants responded that they are completely satisfied with the role of LMAs while only 14.4% indicated that they are very satisfied with LMAs. This ought to be the case and according to previous findings by scholars like Munro (2012) with the advent of technology rural communities can request market information via text message, website, or weekly radio broadcasts.

USAID trained 90 market monitors and facilitated radio, text message, newspaper, and other outreach activities to help the Government of Ethiopia (GoE) promote market information usage in pastoral communities During the first four months of the GoE’s management of NLMIS, the system has expanded coverage from 32 to 45 livestock markets and reported a fourfold increase in the number of text message queries for market information. Through the USAID-supported NLMIS, pastoralists can monitor livestock prices and demand at distant markets and make better choices on when and where to sell livestock (Munro, 2012).

5.4 Conclusion

The study demonstrates that at present the prevailing socio-economic, policy and institutional factors do not favor successful participation of smallholders in livestock value chain in ASALs of Kenya. The socio-economic and institutional factors with reckonable impact on the participation and benefit of smallholders in livestock trading includes the manipulative role of middlemen in livestock value chain, lack of access to market information and distance to livestock markets. Lack of legislation governing the role of LMAs and their relationship with their government counterparts is identified as a main policy gap limiting the role of LMAs to lobby and advocate for better livestock services to benefit stallholders.
5.4.1 Socio-Economic Factors Limiting Stallholders Market Participation

The study concludes that majority of the smallholders own and trade small stock such as chicken and small ruminants in large numbers as compared to large stocks such as camel and donkey which are reared in few numbers. Irrespective of the species, majority of the smallholders tend to sell their livestock to middle men which is among the deterrent to their ability to extensively engage in livestock value chains. It is also clear that pastoralists needed get more reliable information about price of the livestock to sale livestock in large numbers.

5.4.2 Policy and Institutional Factors Limiting Smallholders Market Participation

The study concludes that the distance traveled to the market influences the number of livestock sold. In addition, very few respondents have consistent access to financial services, loan and credit facilities. Due to this fact, there is an over reliance on loans from families and friends. The main few source of formal credit available to pastoralists in ASALs of Kenya is through loans from Village Saving and Lending (VSL) or Non-Governmental organizations (NGOs) in the form of cash grants. The study further concluded that there is an unmet demand by the smallholders in terms of the services provided by their respective LMA and demonstrated for the need for a clear policy framework to recognize and facilitate the role of LMAs.

5.4.3 Best Practices for Adoption to Overcome Market Barriers to Smallholder Livestock Producers

The study concluded that best practices options including successful programs in sustainable management of grazing and water resources at the grassroots; affordable provision of veterinary supplies and inputs as well as in expanding and developing livestock market and provision of loan to smallholder livestock producers will be well received and effectively replicated in ASALs of Kenya.
5.5 Recommendations

5.5.1 Recommendations for Improvement

5.5.1.1 Socio-Economic Factors Limiting Stallholders Market Participation

Prevailing socio-economic, policy and institutional arrangements in ASALS of Kenya as being a barrier to successful participations of smallholders in livestock value chain. Hence efforts need to be made to reverse the situation to pull smallholder livestock producers in ASALs of Kenya out of poverty. Among the bottlenecks; lack of reliable livestock price information has been identified as one of the challenges facing smallholders in ASALs. Given the advancement of telephone technology in the country, mobile platforms should be utilized to extensively disseminate market information to remote areas. Both government and donor agencies supporting the livestock sector in ASALs should forge partnership with mobile network operators to realize this initiative.

5.5.1.2 Policy and Institutional Factors Limiting Smallholders Market Participation

Cognizant of the challenges faced by smallholders, both government and non-government organizations are engaged in construction of livestock markets in ASALs of Kenya. Donors and the devolved government should double their effort in construction of market infrastructure to enhance market access and meaningfully benefit pastoralists in ASALs of Kenya from participation in livestock value chain. Simultaneous efforts need to be made to improve flow of market information, strengthen access to financial and related livestock services to enhance the successful market engagement of smallholder livestock producers.

5.5.1.3 Best Practices for Adoption to Overcome Market Barriers to Smallholder Livestock Producers

Smallholder producers need to be organized into groups to improve their credit worth. In addition, marketing associations such as the LMAs both at local and national levels need to be strengthened to help as a bridge between group of smallholder producers at the grassroots and lending institutions to facilitate the availability of saving and credit services. LMAs also needs to be supported and strengthened to educate smallholders on the importance of financial instruments in their engagement with livestock value chain and advocate for a national policy on financial inclusion to benefit smallholder livestock producers.
5.5.2 Recommendation for Further Studies

Finally, further research needs to be conducted to extensively study and document the cost of forgone opportunities from the regressive livestock sector in ASALs of Kenya. Substantial pecuniary facts need to be presented to political leaders, policy makers and the donor community to demonstrate the need for more investment and formulate policy frameworks to revitalize the livestock sector in ASALs in favor of both the local community and the national economy.


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APPENDICES

APPENDIX I: QUESTIONNAIRE

GENERAL INFORMATION

A. Demographic information

1. County:__________
2. Community/Village: ______________
3. Age of respondent: ______________
4. Occupation of respondent: ___________
5. Gender of Respondent: MALE ) FEMALE )

B. Livestock Marketing Association Membership and Role

6. Are you a member of LMA, CLMC or KLMC?
   YES ( ) NO ( )
7. How long have you been a member …………………
8. Were you elected?
   YES ( ) NO ( )
9. What is your role in the livestock marketing association?
   ……………………………………………………………………………………..

C. The role of the livestock marketing association in livestock trade

10. What is the role of the livestock marketing association you are a member of?

<table>
<thead>
<tr>
<th>Programs</th>
<th>TICK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Peace building</td>
<td></td>
</tr>
<tr>
<td>2. Livestock policy development</td>
<td></td>
</tr>
<tr>
<td>3. Management of Market infrastructures</td>
<td></td>
</tr>
</tbody>
</table>
4. Lobbying for better livestock service

5. Market access and linkage

6. Provision of market information

7. Other/Specify:

C. Membership and income source

11. Where do you draw your members from?

…………………………………………………………………………………….

12. What is your income source?

<table>
<thead>
<tr>
<th>Income Source</th>
<th>Proportion of Revenue %</th>
<th>Frequency of collection (weekly/monthly/yearly/others)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Membership fee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue from livestock markets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government donation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGO support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others/Specify</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D. Participation of stakeholders in livestock value chain

13. How do you rate the participation of smallholder livestock producers in livestock value chain?
Smallholder participation level in livestock value chain | TICK ONE
--- | ---
1. Poor |  
2. Fair |  
3. Satisfactory |  
4. Superior |  

14. If you rate the participation of smallholders in the livestock value chain as poor to fair; characterize the challenges that exist in the current livestock marketing and how it affects smallholder’s market engagement?

<table>
<thead>
<tr>
<th>Limitation</th>
<th>Indicate Impact on smallholders market participation by numbering as (1) Very significant, (2) significant, (3) somehow significant, (4) non-significant</th>
<th>Please elaborate if needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tradition (gender)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Poor market linkage/ high marketing and transaction costs |  
Lack of market information |  
Market access (poor roads to markets/sale yards) |  
Absence of extension services |  
Poor extension services |  
Unfavorable policy environment |  
Others/specify |  

15. Please outline the nature and scope of the problems you observe at different levels?

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

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

16. Describe appropriate changes that need to be put in place to enable smallholders benefit from livestock value chain?
17. Please indicate the roles to be played by the different actors?

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Strategic focus</th>
<th>Suggested Intervention</th>
<th>At what level (Village, county, national)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smallholders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private Sector (traders, service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>providers, investors)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Donors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGOs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Livestock Marketing Associations</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

E. Best Practice experience

18. Please suggest a best practice experience in enhancing smallholder participation in livestock market?

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

19. Please recommend options for replication and scale-up in Kenyan arid lands?

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

20. Suggest the role to be played in disseminating the suggested best practice?

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

.................................
APPENDIX II: INTERVIEW QUESTIONNAIRES – COMMUNITY

GENERAL INFORMATION

A. Demographic Information:

1. County: _________
2. Community/Village: ______________
3. Age of respondent: ______________
4. Occupation of respondent: __________
5. Gender of Respondent:
   1. MALE ( )       2. FEMALE ( )

B. Household Information

6. How many members are there in your household ………………
   MEN …………   WOMEN……………………

SOCIO-ECONOMIC CAUSES FOR THE POOR MARKETS

C. Livestock Information

7. How long have you kept your own livestock ………………

8. How many livestock do you currently have …………………

9. What types of livestock do you have? How many of each?

<table>
<thead>
<tr>
<th>Livestock Species</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goats</td>
<td></td>
</tr>
<tr>
<td>Sheep</td>
<td></td>
</tr>
<tr>
<td>Cattle</td>
<td></td>
</tr>
<tr>
<td>Camel</td>
<td></td>
</tr>
<tr>
<td>Animals</td>
<td>0</td>
</tr>
<tr>
<td>-------------</td>
<td>---</td>
</tr>
<tr>
<td>Donkey</td>
<td></td>
</tr>
<tr>
<td>Poultry</td>
<td></td>
</tr>
<tr>
<td>Other/specify</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
</tr>
</tbody>
</table>

10. On a scale of **0-4** where **0** means no decision at all and **4** means solely decides, who decides which type of livestock to keep and how many

<table>
<thead>
<tr>
<th>#</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Men</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Women</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Do men and women in the family prefer different breeds
   1. YES (  )  
   2. NO (  )

If YES, why?
........................................................................................................................................................................

12. What role do women play in rearing animals at the household level?
   1.
   2.
   3.

13. What role do men play in rearing animals at the household level?
   1.
   2.

14. On a scale of **0-4** where **0** means no decision at all and **4** means solely decides, who decides which type of livestock to keep or sold.

<table>
<thead>
<tr>
<th>#</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Men</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Women</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. Who gets the portion of the money from the sales of livestock?
1. MEN ( ) 2. WOMEN ( )

INSTITUTIONAL AND POLICY GAPS LIMITING MARKET

C. Market/Livestock Value Chain Participation

16. When do you decide to sell your livestock?
   1. When they get sick
   2. When there is a drought
   3. When they are getting old
   4. When they are Mature for consumption
   5. OTHERS…………………………

17. Whom do you consult about making the decision to sell?
   1. 
   2. 
   3. 

18. How many livestock (cattle, shoats, camels, donkeys) do you sell per year? .................

19. If you sell, do you have a preference (SEASON) of when in the year you sell?

   1. YES ( ) 2. NO ( )

20. Do you sell your livestock at a market?

   1. YES ( ) 2. NO ( )

21. What market do you go to most often?

   1. 
   2. 
   3. 
   4. 

22. What factor made you choose that market?
23. How often do you visit the market

1. YEARLY (   )
2. MONTHLY (   )
3. WEEKLY (   )

24. How many animals do you usual sell at each market visit? .................

25. Who goes to the market to sale livestock

1. MEN (   )  2. WOMEN (   )

26. How far is the market? ..................(kms)

27. How do the livestock get to the market?

1. Walk to market
2. Carried by Vehicle

28. Do you sell to a trader/broker?

1. YES (   )  2. NO (   )

29. If brokers, how much commission do you give a broker .........................

30. What prices do you receive for your livestock?

<table>
<thead>
<tr>
<th>Livestock Species</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goats</td>
<td></td>
</tr>
<tr>
<td>Sheep</td>
<td></td>
</tr>
</tbody>
</table>
31. What factors determine the prices?
   1. Size of animal
   2. Season
   3. Market demand
   4. Health of animal

32. Is there a seasonality to pricing?
   1. YES
   2. NO

33. Do prices affect your decision to sell or not?
   1. YES
   2. NO

34. Do you trust the traders/brokers at the market?
   1. YES
   2. NO

35. How fair is the price you receive for your livestock?
   1. FAIR
   2. NOT FAIR
   3. MODERATE

36. The reasons for your answer above
   …………………………………………………………………………………

37. Do you feel safe at the market?
   1. YES
   2. NO
38. Have you ever lost an animal via theft/runaway animal/death?
   1. YES [ ]  2. NO [ ]

PRACTICES TO OVERCOME MARKET BARRIERS

D. Market Information

39. From whom do you get your relevant price information?
   1. Radio
   2. Phone (SMS)
   3. Broachers
   4. Billboards
   5. Friends and relatives
   6. Other sources (state)…………………………..

40. What is your preferred source of market information?
   1. Radio
   2. Phone (SMS)
   3. Friends and relatives
   4. Television
   5. Other sources (state)…………………………..

41. Does the information influence your decision on when to sale your livestock, the type and number of livestock to sale, your choice of market?
   1. DOES NOT INFLUENCE
   2. LOW INFLUENCE
   3. MODERATE INFLUENCE
   4. COMPLETE INFLUENCE
E. Access to Financial Services

1. How do you get paid for your livestock?
   
   1. CASH
   
   2. OTHER FORMS Specify Form

2. Do you have a bank account/MPesa account?
   
   1. YES
   
   2. NO

42. If so, how often do you use the account?
   
   1. FREQUENTLY
   
   2. RARELY
   
   3. MODERATELY
   
   4. DOES NOT USE

43. Do you have access to loans and credit facilities?
   
   1. EASILY ACCESSIBLE
   
   2. MODERATE
   
   3.
   
   4. INACCESSIBLE

44. If YES, which institution do you receive loans from?
   
   1. Banks
   
   2. Table banking groups
   
   3. NGOs
   
   4. Others

45. How much money have you borrowed from the institution (Kshs)
46. If NO, would you take loans if you had access?

   1. YES I WILL
   2. IF THE RATES ARE GOOD
   3. IF I AM IN REAL NEED
   4. NO I WILL NOT.

47. What would you purchase with the loan?

   1. Livestock [ ] 
   2. Houses [ ]
   3. Land [ ]
   4. Others [ ]

F. Livestock Marketing Associations

48. Do you have livestock marketing association in your locality?

   1. YES [ ] 2. NO [ ]

49. Are you a member of the LMA?

   1. YES [ ] 2. NO [ ]

50. Do you pay membership fee?

   1. YES [ ] 2. NO [ ]

51. What does the leadership structure look like?

   1. FORMAL [ ]
   2. INFORMAL [ ]

52. Do they conduct regular election?

   1. YES [ ] 2. NO [ ]
53. How often do they conduct Elections

1. ANNUALY
2. SEMI-ANNUALLY

54. Strength of the roles the LMA play in your locality?

<table>
<thead>
<tr>
<th>Role of LMA</th>
<th>Strong/Weak/None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide training</td>
<td></td>
</tr>
<tr>
<td>Provide price information</td>
<td></td>
</tr>
<tr>
<td>Facilitate market linkages</td>
<td></td>
</tr>
<tr>
<td>Manage market infrastructure</td>
<td></td>
</tr>
<tr>
<td>Advocate for better services</td>
<td></td>
</tr>
<tr>
<td>Other (state)</td>
<td></td>
</tr>
</tbody>
</table>

55. Are you satisfied with service provided by LMAs?

1. NOT SATISFIED
2. AVERAGELY SATISFIED
3. SATISFIED
4. COMPLETELY SATISFIED

56. Do you have any suggestion for improvement in the services provided by LMAs?

……………………………………………………………………………………………………

……………………………………………………………………………………………………

G. Summary

57. Overall what are some of the main challenges that you face raising and selling livestock?

……………………………………………………………………………………………………
58. What would you change to improve livestock production or increase market participation to maximize your benefit?
## APPENDIX III: KEY CHALLENGES AND POSSIBLE SOLUTIONS - LMA

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Strategic Focus</th>
<th>Suggested Interventions</th>
<th>Level of Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>• Policy development</td>
<td>• Identify policy gaps, organize policy development forums and ensure policy implementation.</td>
<td>National &amp; County</td>
</tr>
<tr>
<td></td>
<td>• Provision of services</td>
<td>• Construct access roads &amp; livestock markets with improved standards.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGOs/Donors</td>
<td>• Capacity building of pastoralists and LMAs.</td>
<td>• Training LMAs and government officials</td>
<td>County level &amp; sub-county</td>
</tr>
<tr>
<td></td>
<td>• Expand livestock related economic opportunities that engage and benefit men and women in ASALs.</td>
<td>• Provide facilities and procuring drugs for animal treatment</td>
<td></td>
</tr>
<tr>
<td>Financial institutions</td>
<td>• Access to financial services.</td>
<td>• Training on business ideas and financial management.</td>
<td>County level &amp; sub-county</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Provision of grants and loans.</td>
<td></td>
</tr>
</tbody>
</table>
| Livestock Marketing Associations | • Advocate for better policy and services in ASALs.  
  • Management of market infrastructure.  
  • Enhance market engagement and benefit of smallholders. | • Collect and share tax revenues from livestock sale with county government.  
• Provide smallholders with market information.  
• Support smallholders in capacity building and resource mobilization. | County level & sub-county |
<table>
<thead>
<tr>
<th>CHALLENGES</th>
<th>RECOMMENDATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Livestock Disease</td>
<td>County government to spearhead provision of veterinary care and vaccination campaign</td>
</tr>
<tr>
<td>2 Prolonged drought causing significant livestock mortality</td>
<td>Construction of fodder storage and training of pastoralists on fodder production and preservation.</td>
</tr>
<tr>
<td>3 Water Scarcity</td>
<td>County government to construct new and maintain new water points in pastoralist areas.</td>
</tr>
<tr>
<td>4 Human-wildlife conflict</td>
<td>Game reserve should be fenced to minimize human livestock conflict.</td>
</tr>
<tr>
<td>5 Fluctuating Livestock Price</td>
<td>The county office of trade and commerce needs to regulate the livestock prices.</td>
</tr>
<tr>
<td>6 Insecurity (banditry and cattle rustling)</td>
<td>The government should enhance peace building efforts and extend security and protection to pastoral areas of ASALs.</td>
</tr>
<tr>
<td>7 Remoteness of livestock markets coupled with poor market infrastructure</td>
<td>Build additional livestock markets with better facilities.</td>
</tr>
<tr>
<td>8 Poor Road Networks</td>
<td>The county governments needs to construct all weather rural roads for easier movement and better access to livestock markets.</td>
</tr>
<tr>
<td>9 Low capacity of pastoralist and LMAs</td>
<td>Government and non-governmental actors to train pastoralists in improved livestock husbandry and value addition. Stakeholders also needs to support and strengthen the</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>----------</td>
</tr>
<tr>
<td>10</td>
<td>High tax levies on livestock trade</td>
</tr>
</tbody>
</table>
APPENDIX IV: Map of ASALs in Kenya (Source: GoK 2005)