

**FACTORS INFLUENCING DELIVERY OF EFFECTIVE ANIMAL HEALTH
SERVICES IN GARISSA SUB COUNTY,
KENYA**

BY

JACKSON MWAI KINYUA

**A Research Report Submitted in Partial Fulfillment of the
Requirements for the Award of the Master of Arts Degree in Project
Planning and Management of the University of Nairobi**

2014

DECLARATION

I declare that this report is my original work and that it has not been submitted anywhere for purpose of research or otherwise.

Sign.....

Date.....

JACKSON MWAI KINYUA.

L50/66247/2013.

This research project has been submitted for examination with approval as the University supervisor.

Sign.....

Date.....

DR, KYALO D.N.
Senior Lecturer,
Department of Extra Mural Studies.
University of Nairobi.

DEDICATION

I dedicate this work to all my family members especially my wife Cecilia wangu and children Kinyua, Wanjiru and Wamuyu for their support, encouragement and understanding through research period

ACKNOWLEDGEMENT

I hereby acknowledge the Almighty God's support during the entire period of my studies and specifically during this research writing. I also acknowledge my supervisor Dr Kyalo D.N for her guidance during drafting of the proposal. My sincere thanks go to my lecturers at Garissa Extra Mural Campus for their dedication and for guiding me during my studies.

I would like to appreciate the support provided by Madam Hubbie Al-haji Hussein (County Executive Committee Member of Agriculture, Livestock, Fisheries and Irrigation Garissa County), Mr. James Irungu Mwangi, Edward Kinyua and all other close friends during the proposal writing. I acknowledge my colleagues whom we worked together as a team during the assignments and revisions.

TABLE OF CONTENTS

DECLARATION	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS.....	v
LIST OF TABLES.....	ix
LIST OF FIGURES	xi
ABBREVIATIONS AND ACRONYMS.....	xii
ABSTRACT.....	xiii
CHAPTER ONE	1
INTRODUCTION	1
1.1 Back ground of the study:.....	1
1.2 Problem statement:	3
1.3 Purpose of the study:	4
1.4 Objectives of the study:	4
1.5 Research Questions:	5
1.6 Hypothesis: H ₀	5
1.7 Significance of the study.	5
1.8 Limitation of the study.....	6
1.9 Delimitation of the study.	7
1.10 Assumption of the study.....	7
1.11 Definition of significant terms as used in the study.....	7
1.12 Organization of study.....	8
CHAPTER TWO	9
LITERATURE REVIEW	9
2.1 Introduction	9
2.2 Service Delivery.....	9
2.3 Availability of resources and delivery of animal health services.....	10
2.4 Communication Networks and delivery of animal health services.....	12
2.5 Professional qualification of Service Providers and delivery of animal health.....	15
2.6 Performance Management System and delivery of animal health services.....	17

CHAPTER THREE	21
RESEARCH METHODOLOGY	21
3.1 Introduction	21
3.2 Research design	21
3.3 Target population.....	21
3.4 Sample size and Sampling Procedure	21
3.5 Research Instruments	22
3.6 Instrument Validity.....	22
3.7 Instrument reliability.....	22
3.8 Data Collection Procedure.....	23
3.9 Data Analysis techniques.....	23
3.10 Ethical consideration.....	23
CHAPTER FOUR.....	25
DATA PRESENTATION, INTERPRETATION AND ANALYSIS	25
4.1 Introduction.	25
4.2 Demographic characteristics	25
4.2.1 Gender.....	25
4.2.2 The Age factor.	26
4.2.3: Education level.	26
4.2.4: Period of years as a livestock keeper.....	27
4.2.5: Need to seek Animal Health Services for livestock in the last 3 months.	27
4.3: Availability of resources.....	28
4.2.1: Government deployment of animal health service providers in the sub county.	28
4.3.2: Government animal health service providers have adequate veterinary equipment such as syringes and A.I equipment.	29
4.3.4 The government has provided enough transport for veterinary staff.	30
4.4.1: increase in number of the livestock treated and vaccinated in last five years AHSPS within the locality.	31
4.4.2: Department of veterinary services for the last 5 years has become more responsive to respondents need.	32
4.4.3 Urgency of AHSP during disease outbreak.	33

4.4.4	Accessing quality advice regarding the use of livestock drugs from AHSPs.	34
4.5:	Professional qualifications of the Animal Health Service Providers.....	34
4.5.1:	trained AHSP is more effective on the job.	35
4.5.2:	Livestock attended by GOK, AHSPs respond well to treatment.	35
4.5.3:	Livestock Attended by CAHW respond well to treatment.	36
4.5.4:	Trust in the Government AHSP when attending to your livestock.	37
4.5.5:	Trust in CAHWS when attending to your livestock.....	37
4.6:	Communication Net Works.	38
4.6.1:	seeking information on animal health is important for my livestock.....	38
4.6.2:	AHSPs are important source of information.	39
4.6.3:	Chief’s barazas, schools, and mosques are important in passing AH information.	39
4.6.4:	AHSPs are easily accessible by road.	40
4.6.5:	AHSPs can be reached by mobile phones.....	41
4.6.6:	Radios and TVs are important source of information on proper animal husbandry.	41
4.7	Testing of hypothesis.	42
4.7.1	Testing of hypothesis one.....	42
4.7.2	Testing of hypothesis two.....	43
4.7.3	Testing of hypothesis three.	44
4.7.4	Testing of hypothesis four.....	45
CHAPTER FIVE	48
SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATION.	48
5.1	Introduction.	48
5.2	Summary of the findings.	48
5.3	Discussion of the findings.	48
5.3.1	Descriptive results.	48
5.3.2	Analytical Results.....	51
5.4	Conclusion of the study.	51
5.5	Recommendations.	52

5.6 Suggestions for further research.....	53
REFERENCE.....	55
APPENDICES.....	61
APPENDIX 1 : LETTER OF TRANSMITTAL.....	61
APPENDEX II : SURVEY QUESTIONNAIRE.....	62
APPENDIX III: PERMISSION LETTER.....	67

LIST OF TABLES

Table 3.1 Operationalization of the study variables.....	24
Table 4.1: frequency and percentage distribution of gender of the respondents.....	25
Table 4.2: frequency and percentage distribution of the age of the respondents.....	26
Table 4.3: frequency and percentage distribution of education level of the respondents.	26
Table 5 - 4.4: frequency and percentage distribution of the period of years as a livestock keeper.....	27
Table 4.5: frequency and percentage distribution of the respondents on the Need to seek Animal Health Services for livestock in the last 3 months.	27
Table 4.6: frequency and percentage distribution of the respondents on Government deployment of enough Animal Health Service providers in the sub county.....	28
Table 4.7: frequency and percentage distribution of the respondents on Government.....	29
Table 4.8: frequency and percentage distribution of the respondents on Government providing sufficient drugs and vaccines for treatment of the livestock.	30
Table 4.9: frequency and percentage distribution of the respondents on Government providing enough transport for veterinary staff.....	30
Table 4.10: frequency and percentage distribution of the respondents' awareness about increase in number of the livestock treated and vaccinated in last five years AHSPS within the locality.	31
Table 4.11: frequency and percentage distribution of the respondents' information about Department of veterinary services being more responsive to their needs for the last 5 years.....	32
Table 4.12: frequency and percentage distribution of the respondents' information about how easy it is to schedule urgent appointment with AHSP when there is a disease outbreak.	33
Table 4.13: frequency and percentage distribution of the respondents' information about accessing quality advice regarding the use of livestock drugs from AHSPs.....	34
Table 4.14: frequency and percentage distribution of the respondents about trained AHSP being more effective on the job.	35
Table 4.15: frequency and percentage distribution of the respondents' information about livestock attended by GOK, AHSP respond well to treatment.	35
Table 4.16: frequency and percentage distribution of the respondents' information about livestock attended by CAHW respond well to treatment.....	36

Table 4.17: frequency and percentage distribution of the respondents' information about Trust in the Government AHSP when attending to your livestock.....	37
Table 4.18: frequency and percentage distribution of the respondents' information about Trust in CAHWS when attending to your livestock.....	37
Table 4.19: frequency and percentage distribution of the respondents' information about seeking information on animal health being important for their livestock.....	38
Table 4.20: frequency and percentage distribution of the respondents' information about AHSPs being important source of information.....	39
Table 4.21: frequency and percentage distribution of the respondents' information about chief's barazas, schools, and mosques being important in passing AH information.....	39
Table 4.22: frequency and percentage distribution of the respondents' information about AHSPs being easily accessible by road.....	40
Table 4.23: frequency and percentage distribution of the respondents' information about AHSPs can be reached by mobile phones.....	41
Table 4.24: frequency and percentage distribution of the respondents' information about Radios and TVs as important source of information on proper animal husbandry.....	41
Table 4.25: ANOVA for availability of resources and effectiveness of animal health services.....	43
Table 4.26: ANOVA for Professional qualification of service providers and effectiveness of animal health services.....	44
Table 4.27: ANOVA for performance management system and effective delivery of animal health services.....	45
Table 4.28 ANOVA for communication net work and effectiveness of animal health services.....	45

LIST OF FIGURES

Figure 2. 1 - Conceptual Framework**Error! Bookmark not defined.**

ABBREVIATIONS AND ACRONYMS.

VET	Veterinarian
AHTs	Animal Health Technicians
AHSPs	Animal Health Service Providers.
CAHWs	Community Animal Health Workers.
FAO	Food and Agricultural Organization
NGO	Non Governmental Organization
ASAL	Arid Semi Arid Lands
MDGs	Millennium Development Goals.
GDP	Gross Domestic Product.
PRSP	Poverty Reduction Strategy Paper.
ERSWEC	Economic Recovery Strategy for Wealth and Employment Creation.
SRA	Strategy for Revitalization of Agriculture.
RP	Rinderpest.
CBPP	Contagious Bovine Pleural Pneumonia
RVF	Rift Valley Fever.
FMD	Food and Mouth Disease
ICT	Information Communication Technology
AI	Artificial Insemination

ABSTRACT.

The research study investigated the factors influencing the delivery of effective animal health services in Garissa Sub County. The objectives of the study was to establish the extent to which availability of resources (financial, material and human), professional qualification of animal health service providers (AHSPs), performance management system and Communication networks influence delivery of animal health services in Garissa Sub County. The study used descriptive survey design with the questionnaires as the main research instrument for collecting data. The target population was 115,000 people which had 19,167 households and a sample size of 190 households. Simple random sampling technique was used for selecting households to be sampled in all the 8 locations of Garissa Sub County. The data collected was analyzed by descriptive and analytical techniques through SPSS software. This involved construction of frequencies, percentages and, distribution tables. Analysis of variance (ANOVA) was computed to test the hypothesis at 5% significance level. The findings of the study revealed that there was significant association between the influence of availability of resources and effective delivery of animal health service. Secondly there was association that existed between professional qualification and effective delivery of animal health services. Thirdly, it was established there was no association that existed between performance management system and effective delivery of animal health service. Finally, it was established that there was significant association between communication networks and effective delivery of animal health services. The findings recommend the need to raise awareness among the livestock keepers on the importance of seeking animal health services. There was need to sensitize the community about the importance of education in the sub county. More training facilities should be channeled in the area and mobile training school encouraged. There was need to review and strengthen policies concerning the cost of treatment of livestock and also raise awareness among livestock farmers on the importance of keeping healthy livestock in order to protect their livelihood and food security.

CHAPTER ONE

INTRODUCTION

1.1 Back ground of the study:

In order to end globe poverty, the United Nations General Assembly meeting of world leaders held in 2002 identified and agreed on Eight Millennium Development goals (MDGs). Through millennium Declaration the world made a deal that poor countries commit to good governance and development policies based on sound science and scaling up of best practices and access to market(GA resolution, A/54/2000). Goal number one of the MDGs is to half the hunger incidence by 2015.If this target is achieved, there will be an opportunity to end extreme poverty by 2025(Sachs, 2005). The Food and Agriculture Organization(FAO,2002) of the United Nations cautions that the failure to alleviate hunger is more glaring in Central, East and Southern Africa where the number and proportion of hungry people are forecasted to increase. According to (A-AARNET 2005).this was contributed by poor or degraded natural resource base, inadequate access to knowledge and technology and poor physical access to production inputs and to market their goods.

According to recent estimates there are approximately one billion house holds in developing countries dependent upon livestock for food and economic security(LID,1999).The Government of Kenya has tried to eradicate poverty through National development plans, sessional papers and various research studies(GOK,2001). Livestock keeping being the main stay of most rural households contributes significantly to the livelihoods of the Kenyan citizens (GOK,2008). The sector earns the county substantial foreign exchange through' export of live animals hides and skins, dairy products and some processed pork products. It is therefore key in the achievement of the first important MDG. In Kenya over 60% of all livestock are found in the Arid and Semi Arid Lands (ASALs), where it employs about 90% of the local population. The livestock sub-sector accounts for about 10% of the entire GDP and about 42% of the agricultural GDP. (GOK,2008). Stakeholders in livestock sector recognized the role that a vibrant livestock industry can play to reverse the poverty levels and contribute to the nation's economic growth. The recognition was emphasized in various government policy

documents such as the ninth National Development Plan – 2002 -2008, Poverty Reduction Strategy Paper (PRSP), Economic Recovery Strategy for Wealth and Employment Creation (ERSWEC) -2003 to 2007, Strategy for Revitalizing Agriculture (SRA) 2004 – 2014, Kenya Vision 2030 and the National Livestock Development Policy. These policies are in line with the Millennium Development Goals (MDGs), i.e contributing to food security, protection of the environment and establishment of global linkages.(GOK, 2008).

The New poverty agenda with its attendant focus on rural livelihood has recognized the contribution of livestock to the social and economic development of the poor (Carey,1998:LID,1999). For all livestock owners in Kenya livestock constitute an important financial asset (for many pastoralist is their only financial asset).providing both food (milk, meat, blood and eggs).and income (through sale, barter, transport, draught power and work hire. Livestock are also significant social assets for many livestock owners particularly pastoralist and agro pastoralist it play a key role in building and consolidating social relationship and networks for most pastoralist, between clan members, in-laws/ friends and are commonly the currency of both gifts and fines. .(A-AARNET 2005,Ndikumana et al 2000).Despite the enormous economic contribution of livestock to the economy of the developing countries and Kenya in particular, poor animal health was a major impediment to optimal livestock production Losses due to diseases came in different forms, this included death of animals, medication cost, condemnation of products at the processing plants, loss of draught power as a result of weakness, poor growth, poor feed conversion and downgrading(Mlangwa and Kisauzi, 1994).

Livestock trade in ECA countries had suffered large setbacks due to bans imposed upon outbreak of diseases such as Rift Valley Fever (A-AARNET 2005,Ndikumana et al 2000).. Availability of quality animal health services played a significant role in enhancing the productivity of the livestock sector.(Umali et 1994).The reform of animal health services in developing countries and in Kenya particularly has received much attention in recent years. According to FAO,2002, in many developing countries

veterinary services had been provided almost exclusively by the state, but growing fiscal pressures have commonly reduced the availability and quality of these services to a low level.

1.2 Problem statement:

Many developing countries with their rapidly expanding population and growing economies require increasing quantities of livestock products to satisfy domestic demand. In Sub-Saharan Africa Jahnke (1982) estimate that annual demand increasing by 4.2%, 3.8% and 5.2% for meat, milk and eggs respectively whereas the annual average growth rate for the production in only 2%. The availability and quality animal health services can play a key role in increasing the productivity of the Livestock Sector (Anteneh, 1989 Umali et al 1994a).

Many argue that the presence of readily controlled diseases and the consequent poor performance of the livestock sector is indicative of weak service delivery system that have failed to provide the necessary advice and drugs to livestock producers (FAO, 1988, Mlangwa and Kisauzi, 1994, Schillhorn van Veen, 1984, Walshe, 1987). The state has typically assumed almost sole responsibility for the delivery of animal health services in developing countries (Walshe, 1987: Umali et al: 1992: Leonard, 1993). The inadequate supply of veterinary services was therefore commonly attributed to poor public sector performance. Disease constraints were estimated to cause losses of up to 30% of annual livestock output in developing countries, twice that estimated for developed countries (FAO 1990a).

Despite reform measures which are designed to enhance the capacity of the state to delivery services. Such as introduction of cost-recovery measures, privatization of veterinary services, decentralization and performance appraisal system the delivery of animal health services were not effective(Kajume) The effective delivery of veterinary services to smallholder farmers is considered a key factor influencing the productivity of the livestock factor. Privatization was promulgated as a way of improving the availability and quality of animal health inputs to livestock sector however; it performed

dismally in ASALS. New approaches, beyond market – dependent privatization, were therefore needed to improve the quality of service delivery.

In Garissa Sub County, despite the state assuming almost sole responsibility of animal health services there was inadequate livestock improvement services, clinical services and vaccinations. The sub county was in permanent Contagious Bovine Pleural Pneumonia (CBPP) quarantine. Rift Valley Fever (RVF) outbreak of 2007/2008 and other easily controlled diseases were indicative of inefficient animal health services delivery system.(Veterinary department,2008).

Identifying factors that influence effective delivery of animal health services had a lot of implications for policy formulation,planning and implemenation of livestock disease control programme(Randella et al). The study therefore sought to understand factors influencing the delivery of animal health services among livestock owners in Garissa sub county.

1.3 Purpose of the study:

The purpose of the study was to investigate factors that influence delivery of effective animal health services in Kenya with specific reference to Garissa Sub County.

1.4 Objectives of the study:

The study was guided by the following objectives:

1. To establish the extent to which availability of resources influence delivery of animal health services in Garissa Sub County.
2. To evaluate how qualification of service providers influence delivery of animal health services in Garissa Sub County.
3. To determine how performance management system in Government institutions influence delivery of animal health services in Garissa Sub County.
4. To determine how Communication networks influence delivery of animal health services in Garissa Sub County.

1.5 Research Questions:

To achieve afore set objectives, the study sought to answer the following questions:

1. To what extent does availability of resources influence delivery of animal health services in Garissa Sub County -
2. Does qualification of service providers influence delivery animal health services in Garissa Sub County?
3. How does implementation of performance management system influence delivery of animal health services in Garissa Sub County?
4. Do communication networks influence delivery of animal health services in Garissa Sub County?

1.6 Hypothesis: H₀

- i) There is no significant association between availability of resources and effective delivery of animal health services in Garissa Sub County.
- ii) There is no significant association between professional qualification of Service providers and effective delivery of animal health services in Garissa Sub County.
- iii) There is no significant association between performance management system and effective delivery of animal health services in Garissa Sub County.
- iv) There is no significant association between communication networks and effective delivery of animal health services in Garissa Sub County.

1.7 Significance of the study.

The study is important to several players in animal health services delivery system. This study may assist the government in policy formulation, planning and implementation of livestock disease control programme. The government may take the necessary steps to allocate adequate funds to the relevant departments to facilitate or enhance animal health services delivery in ASAL parts of Kenya. The Government may create strong partnership in disease control between the public sector and the livestock stakeholders. The government may create the necessary enabling environment to enlist private sector and community participation in disease and pest control and surveillance.

To address the issue of qualification of service providers (SP) the government may enhance the capacity of DVS (Director of Veterinary Services) by employing more qualified technical personnel. The government and other stakeholders may facilitate employment, self-employment, and deployment of adequate numbers of professionally and technically qualified personnel to adequately serve the livestock sector. Further where economic and business environment does not allow for the establishment of viable private sector services as in the cases of the ASALs, the government may establish appropriate mechanism to provide professionally and technically qualified personnel.

The government may encourage several network providers to invest in ASALs areas to increase network coverage. The government may enhance the performance contracting and staff performance appraisal systems in all its departments. This will enhance service delivery especially in Veterinary department.

NGO's supporting sustainable livelihoods will find the findings of the study relevant as it will be used to formulate appropriate strategies for sustainable livelihoods in arid and semi arid areas in Kenya thus improving living standards of the population. The development partners who are very keen at assisting the marginalized communities will have an understanding of a wide variety of factors that hinder effective animal health services in ASALS of Kenya. The livestock keepers will have known what services they expect from all the players in animal health services in Garissa County. The study will enable the researchers to understand the necessary resources which may be required in future related studies.

1.8 Limitation of the study

The study faced language barrier challenge as 80% of the target population spoke Somali only. There was a need of translator during data collection. Gender disparities arose during data collection as most respondent were men. Responses from female respondents were minimal due to cultural inhibition and therefore I sought assistance from a female research assistant.

Interview hours were limited due to early departure of pastoralist from their manyattas in search of pasture and water for their livestock. The data collection was between 6.00am and 8.00am.. High expectations from the pastoralists may have led to inaccurate data.

1.9 Delimitation of the study.

The study was designed to investigate the factors influencing delivery of effective animal health services in Kenya with reference to Garissa Sub County. Garissa Sub County might have had unusual characteristics that might have influenced the findings but the results were used for comparison between results obtained from studies in other sub counties in Kenya.

1.10 Assumption of the study.

The respondents were familiar with concept of availability of resources, professional qualification of AHSPs, performance management system, communication networks and effective delivery of animal health services. Respondents were a representative of the target population mainly livestock keepers.

The research assumed the target community had knowledge of what they expect from the government and other service providers as far as delivery of animal health services were concerned. Finally the researcher's instruments did not in either way influence the participant's response.

1.11 Definition of significant terms as used in the study.

CAHWs-Community Animal Health Workers. They live and move with their community; they have received short training courses to enable them to treat other people's animals and they supplement their income from livestock by selling drugs.

Animal health services. It is ensuring that farmed animals are healthy; disease free and well looked after. One of the key roles is to implement government policies aimed at preventing; managing outbreaks of serious animal diseases and in doing so support the farming industry, protect welfare of farmed animals and safeguard public health from animal borne diseases.

AHSP- Animal Health Service Provider. The personnel providing these services may be professional veterinarian holding university degree, technicians or others with short-term training in animal.

Ethno veterinary system. This is the traditional animal health care.

1.12 Organization of study.

This research report is organized into five chapters. Chapter one describes the introduction of the study which includes the background of the study, statement of the study, the purpose of the study, the research objectives and the research questions. This section also highlights the significance of the study, the basic assumptions, the limitations and the delimitations, definition of the significant terms and the organization of the study.

Chapter two is on the literature review and is sub-divided seven sections as follows; introduction, description of the themes of first, second, third and fourth objectives respectively. The section also describes the theoretical framework, the conceptual framework and the explanation of relationships of the variables in the conceptual framework.

Chapter three describes the research methodology which includes the introduction, research design, and description of the target population, sample size determination and sampling procedure. It also describes the data collection methodologies, validity and reliability of the instrument, data collection procedure, data analysis techniques, ethical considerations and lastly the operational definition of the variables. Chapter four describes the presentation of the findings, analysis and interpretation. Chapter five will give the discussion of the findings, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter concentrated on reviewing literature written by various scholars on factors that influence animal health services delivery. The intention was to broaden the understanding of the researcher from past studies to avoid following approaches that had failed in the past.

2.2 Service Delivery

Services are a form of product that consists of activities, benefits or satisfaction offered for sale that are essentially intangible and do not result in ownership of anything (Kotler, Armstrong 2008). Metters et al (2006) states that services have different characteristics than goods. These include the intangibility of services, simultaneous production and consumption, proximity to the customer and that services cannot be inventoried.

According to Eteel et al (2007), services are offered by both for profit and non-business service organizations. For profit services firms sell to consumers or other businesses with profitable operations as a primary goal. These include banks. Non business service organizations are of two types. One is not for profit services organization which have a profit goal because growth and continued existence depends on generating revenue in excess of its costs. However profit (which may be referred by a different name such as surplus) is secondary to the N-F-P's primary objective. These include universities and museums.

The second type of non-business organization is the non -profit organization. A non-profit organization provides services but does not have a profit or a surplus objective. The central and county governments in Kenya fall into this category. Historically, service delivery in the animal health sector in Kenya has not been up to standard. More recently, several developments like reduction of government funding, Kenyans becoming more vigilant and requiring more accountability from the government as well as devolution has led the public to demand better services. Due to their nature delivery of services in the

animal health sector can be affected by various factors such as communication, resource availability, professional qualification of animal health service provider (AHSP) and performance management system. Intervening variable such as weather also influenced animal health services in a great way. Moderating variable such as government policies affected animal health services.

2.3 Availability of resources and delivery of animal health services.

Resources can be classified as both financial and human resources.

According to Commack 2011, weak public service delivery reflects in part the challenges of priority setting and poor decision making rather than resource scarcity. Service provision or delivery is an immediate output of the inputs into animal health system such as work force, procurement, supplies and finances. Increased inputs should lead to improved service delivery and enhanced access to services. According to Umali et al (1992).economies of scale exist when the cost of providing a service falls as the scale of operation increases. This usually occurs when the provision of the services has a high fixed cost as in the case of research, diagnostic laboratories or the production of veterinary pharmaceuticals. The provision of animal health services in sparsely populated areas such as Garissa Sub County had high fixed costs in the form of travel cost to the points of service delivery. Private sector provision of services can be inhabited if there are significant economies of scale associated with the delivery of service. This meant that the state and NGOs was the sole provider of these services in Garissa Sub County and other ASALs

Although the private sector may provide services more efficiently (in economic terms) than the state, they may not do so in an equitable manner. Poor farmers, for example may not be able to afford the services provided by private veterinary clinics (Jims and Leonard, 1990, Jarvis 1986). Some argue that even where privatization is justified on efficiency ground, Social development objectives may warrant public sector involvement to ensure that all farmers have equal access to veterinary services (Ross 19992, Haq 1992. Antholt 1994). This is for social welfare reasons it is considered desirable that all farmers have access to certain services.

Kajume and Muthee(1997) noted that Sessional Paper No 1 (1965) ‘African Socialism in Kenya set the scene for a massive increase in government livestock services, to be provided for free throughout the country, and massive investment in the professionalisation of the veterinary service. Veterinary Scouts at village level were gradually phased out and replaced by Veterinarians and Animal Health Technicians (AHTs), based at Divisional and Locational level respectively. The Private Practitioners went out of business. Many were expatriates and left the country. Although clinical services became more accessible in the high potential areas, they did not improve much in the arid and semi-arid areas (ASAL) because relatively fewer Veterinarians and AHTs were posted there and, without enough Vet Scouts or any other intermediaries, they could hardly reach the ASAL nomadic herds because of the vast distances, poor terrain and poor road network. Budget restrictions began to bite in the late 1980s and the government stopped automatically employing all veterinarians and AHTs on graduation in 1988, and froze recruitment into vacant posts. This had a disproportionate impact in the ASAL areas (commonly referred to as hardship areas) as veterinarians and AHTs in those areas frequently requested transfers to less remote areas.

Improving veterinary service delivery to combat and control emerging and re-emerging animal disease is critical measure for unraveling the benefits of increased global demand for livestock products to rural poor farmers and reducing associated animal and human health related risks (Wymann et al. 2007; Hall et al. 2004). However, continued fiscal challenges have continued to put pressure on the provision of veterinary services in most developing countries forcing governments to experiment different institutional arrangements for providing veterinary services (Pica-Ciamarra & Otte 2008). In Uganda, government adopted the structural adjustment programs in late 1980s and early 1990s. This resulted to decentralization and privatization of clinical veterinary services and downscaling of civil service (Haan & Umali 1992). Clinical services, breeding and spraying for tick control were privatized while vaccination of animals against epidemic diseases, quarantines and tsetse control were retained under the ministry of agriculture animal industry and fisheries (MAAIF). The purpose of these reforms was to reduce costs of public administration and public expenditure.

2.4 Communication Networks and delivery of animal health services.

Taylor (1991) defined communication as giving, receiving or exchanging information, opinions or ideas by writing, speech or visual means so that the message communicated is completely understood by the recipients. The communication network included the road network and how passable they were.

Knowledge and information have become the major drivers of social and economic transformation in the world. Knowledge and information are now as important, if not more, factors in development, and this trend is set to intensify. Agricultural education and extension can play a critical role in the transformation process to transfer technology, support learning, assist farmers in problem-solving, and enable farmers to become more actively embedded in the agricultural knowledge and information system (Christoplos & Kidd, 2000). However many farmers have complained about the unavailability of extension staff in their locality for consultation or advice. . Even when they are available many women do not get access to extension officers because many of them are men and there are cultural inhibitions for their interaction with women farmers.

One promising area to do agricultural extension to reach large number of farmers is using information communication technologies (ICTs) such as mobile telephony, innovative community radio and television programs, mobile phones in combination with radio, video shows, information kiosks, web portals, rural tele-centers, farmer call centers, video-conference, offline multimedia CDs, and open distance learning (Gakuru et al., 2009). ICT-based agricultural extension brought incredible opportunities and had the potential of enabling the empowerment of farming Communities. With the availability of ICTs the proposition for an increasing number of extension staff may no longer be wholly valid. Moreover, the use of ICTs to improve information flow and to connect people within the rural areas proved that illiteracy of farming communities may no longer be an excuse to deny some form of extension system (Christoplos & Kidd, 2000).

The social systems and/or networks in Africa aid in the sharing of knowledge. The availability of a few mobile phones to start with does quickly spread a message from an authentic source to clan members, solidarity association members, and other members of the community. Mobile telephony in combination with radio enables messages to be given to a large number of listeners. Evidences also suggested that the technology was being effectively used in some countries in Africa with remarkable success on market price information, weather forecasts, transport information, information on storage facilities and information related to crop and livestock diseases and general advice related to agriculture (Gakuru et al., 2009). , Studies conducted in selected countries in Sub-Saharan Africa (Tanzania, Malawi, Mali, Mozambique, Ghana, and South Africa) showed that rural radios with innovative programs including dramas and radio forums tailored to local communities are an effective way of communicating agricultural messages (Farm Radio International (FRI), 2008a).

In Kenya the national farmers information service (NAFIS) line covers a wide range of crops and livestock where the country's farming community would receive and exchange timely news and information on agriculture, weather patterns and other related issues through their mobile phones (Gakuru et al. 2009)In Kenya, mobile telephony was being used for delivery of animal health services which has reduced transactions costs and increased efficiency of animal care (Kithuka, et al. 2007).The system works with a community animal health worker, . Animal health assistants and veterinarians who purchased veterinary drug kit and mobile phone at a subsidized price. The phone system allowed the animal health care providers to update one another, share information, and conduct referrals. A pilot ASAL radio program where pastoralists had an interactive call section was being implemented by FAO in collaboration with the ministry of agriculture and livestock development.

According to Gillwald et. al. (2010), rural people mostly live sparsely and this would make provision of infrastructure and public utilities such as electric power, water, health facilities, and some devices of modern ICTs very difficult to deploy in rural areas. Private companies invest their resources in areas where they would get good returns. In addition,

provision of ICT services required electricity which was limited in most places of rural Africa. Moreover, incomes of the rural people tend to be lower as compared to urban areas, and many rural households simply cannot afford modern ICTs (such as mobile phones, computer and internet). In effect, the combination of these constraints would result in a digital divide between the urban and rural areas. . Based on household and individual access and usage survey conducted across 17 African countries, Gillwald et al. (2010) found that the diffusion of ICTs (mobile, internet, radio and television) was highly uneven, concentrated in urban areas and leaving some rural areas almost untouched. Access to these technologies was constrained by income as is usage, and as they become more complex, they are increasingly constrained by literacy and education.

Access to veterinary drugs, advice or animal health care provider to treat animals are improved by physical proximity, available transport, transport infrastructure, and other means of communication. Acceptable access time varies with Production system, pastoralists and agro-pastoralists being willing to travel for longer than settled farmers. Type of service needed, curative drugs and treatment usually being needed more quickly than preventive For quality of service longer access time may be acceptable if it means customers can obtain service offering superior choice or quality.

Private veterinarians in less-developed countries tend to be relatively few in number and clustered in peri-urban areas around main market centres or in areas where government contracts are easily available. For example, only 50% of the provinces in Morocco have private veterinarians, and mixed (large and small animal) practices obtain 40% of their income from government contract work (Fassi Fehri and Bakkoury, 1995) In India, all private practitioners are based within large towns and rely on services to companion animals to generate income. In Ethiopia, Moorhouse and Ayalew Tolossa (1998) found only 8 private veterinarians per region compared with 102 public-sector veterinarians, and the majority of private clinics were based in Addis Ababa. This geographic clustering limits access by the poor, who often live in rural or remote locations. The development of private clinics has had a positive (though not universal) impact on access in dairy and peri-urban systems, but very limited impact in pastoralist and agropastoralist systems. To

address this situation, there is potential for networking of private vets and para-professionals.

2.5 Professional qualification of Service Providers and delivery of animal health services.

The concept of community-based animal health workers (CAHWs) probably arose from experiences in the human health sector. The terminology “barefoot vets” (Halpin, 1981) seems to derive from China’s successful and ongoing use of “barefoot doctors” to bring basic services to the masses, as described by Chetley et al., 1995. In the early 1970s the World Bank advocated that livestock producers’ associations should include “grassroots level para-veterinarians”(de Haan and Nissen, 1985) this advice was influential and raised awareness. Since that time various groups have developed and refined CAHW systems, for example in Eastern Africa Non Governmental Organizations (NGO) and bilateral agencies have been particularly influential whereas in SE Asia Government veterinary services and been at the fore of their development (Leidl 1996).McCorkle (2002) reviewed literature and estimates that since the 1970s, CAHW initiatives have been implemented in 46 nations. . Growing interest in CAHW systems is largely related to the high impact on animal health and human livelihoods resulting from improved basic veterinary care in rural communities.

According to Arandin et al: 1991, Almond, 1991: Peter, 1993). Para-veterinarians (CAHWS and vet scouts) are members of the community who had trained in the basics of animal health care. They live locally do not require transport and have lower income expectations than professional veterinarians. They are therefore able to provide some clinical services at a much lower cost than comparable services delivered by professional veterinarians. In contrast to livestock workers from urban or other-culture backgrounds local para-veterinarians speak the native language, know the stockowners and elhno-veterinary-system and are much more accessible than formal AHSP (They usually are able to win farmers confidence more easily than outsiders, especially when local community has a direct hand in their selection (Mc Corkle and Methias-Mundy, 1990: O deyemi 1994a: Ibrahim 1993: Stonfen and Ojha, 1993). The use of para veterinarian can

greatly increase the supply of drugs and vaccine to rural areas that might otherwise not have benefited from veterinary services.

In Thailand, the state veterinary services trained over 20,000 villagers. Key man (para-veterinarians) to provide animal health services to village animals. The services now employ seven times more key men than veterinarians and have been able to reach significantly greater number of farmers (Juengling et al, 1993). In Afghanistan CAHW programmes reduced mortality by 5% in calves, 10% in lambs and 38% in kids, compared with control areas without CAHWs. The benefits to farmers estimated to be \$120,000 per district per annum, while the costs of the programme were \$25,000 per district (Schreuder et al., 1995). Schreuder et al. (1996) estimated cost-benefit ratios between 2:1 and 5:1 for a CAHW programme in Afghanistan, compared to a previous situation of no service.

In Malawi the saving from increased livestock production in areas where CAHWs were active was \$57,000 in the year 1998-99. Farmers with CAHW services were more likely to afford a tin roof, window glass, ox cart, plough and radio, than farmers without access to CAHW services (Hüttner, 2000).

Established in 1998, a CAHW project in Simanjiro District, Tanzania, was assessed in May 2001. The use of interviews and participatory methods showed how Maasai pastoralists associated the CAHW service with reductions in calf mortality of between 59 and 93%. This led to increased sizes of milking herds and more cows milked per household. Umali et al. (1994) associated a 30% decline in the Ugandan livestock population between 1985 and 1990 with inability of state veterinary services to contain diseases, although there were a number of other war-related factors that may have caused the decline.

Kenya farmers without access to CAHWs reported 70% more cattle deaths than those farmers who had access to CAHWs. The decrease in mortality provided benefits worth \$48 a year to each farmer using CAHWs (Holden 1997a)

A review of Oxfam UK/Ireland's CAHW project in north-east Kenya in 1998 compared livestock mortality in project and non project areas (Odhiambo et al., 1998). In non-project sites annual mortality in camels, cattle and sheep and goats was estimated at 31%, 32% and 25% respectively whereas in project sites annual mortality was 20%, 17% and 18%. The reduced loss of livestock was valued at Kenya Shillings 22,853 (approximately USD 350.00) for each household in the project area and this sum was sufficient to buy grain to feed 2 adults and 4 children for 250 days.

Security (Nalitolela et al).

McLeod and Heffernan (1999), assessing a pastoralist development project in northern Kenya, concluded that many other factors, such as drought, made the links between community-based animal health worker (CAHW) activities and productivity inconclusive and resorted to other measures of benefit. However, Odhiambo et al (1998) compared similar areas of northern Kenya that had and had not been included in a CAHW project, and concluded that the CAHW activities had contributed to reduction in livestock mortality rates. In the specific case of RP control, focus on service to pastoralist communities has increased vaccination coverage (van t_Klooster, 2000) and is contributing to disease eradication.

2.6 Performance Management System and delivery of animal health services.

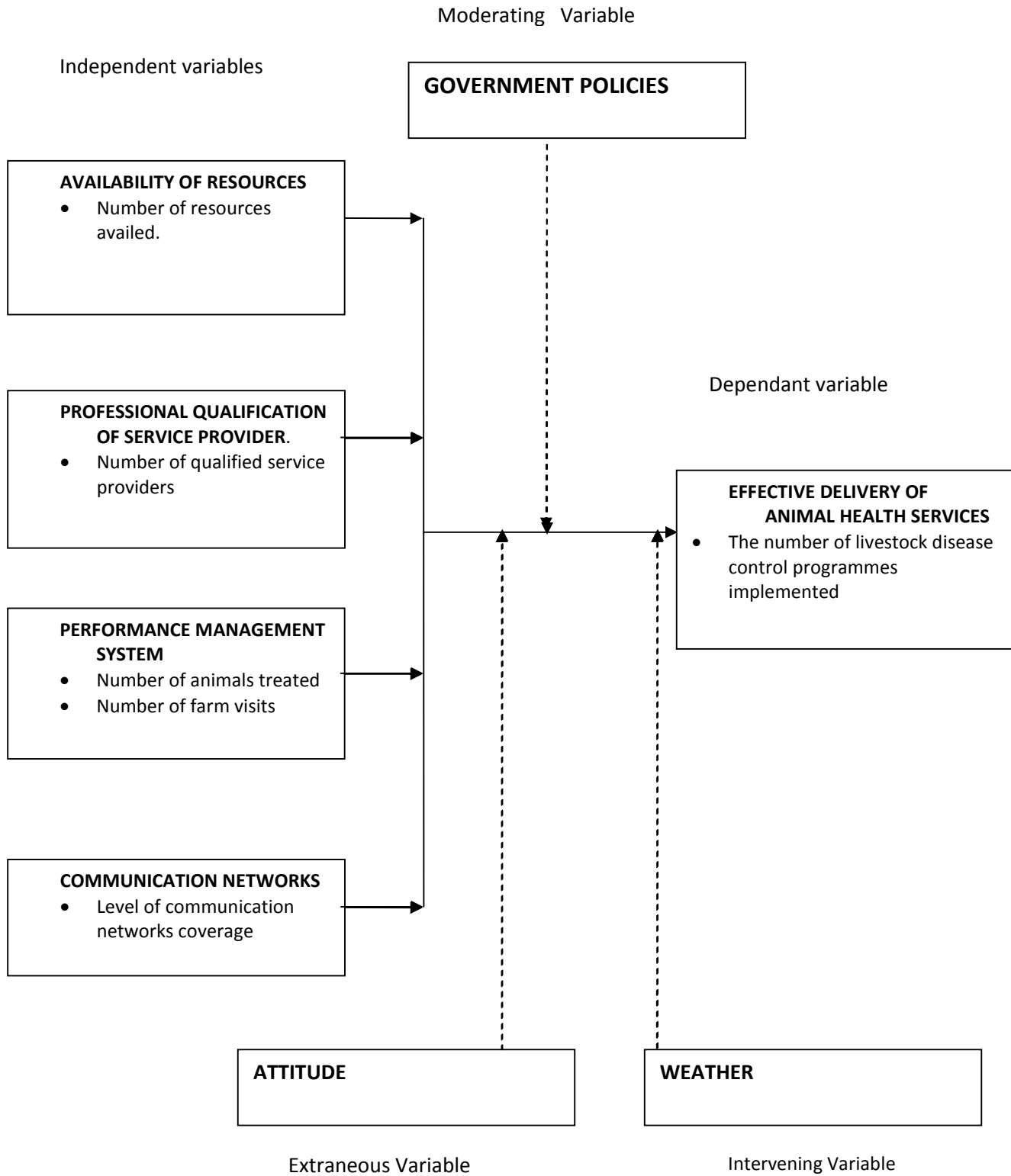
The process of performance management involved the identification of common goals between the appraiser and the appraisee. These goals must correlate to the overall organizational goals. If such a process is conducted effectively, it will increase productivity and quality of output (Davis, 1995). Armstrong (2001) notes that in performance appraisals, accuracy and fairness in measuring employee performance is very important. Performance management is a control measure used to determine deviations of work tasks with a view of taking corrective action. It is also used to reflect on past performance as the organization plans ahead. Provision of feedback on the required corrective action is critical in the process.

Performance monitoring and oversight can come from both the top down (from monitoring authorities) and the bottom up (from users and communities), and may be most effective where they combine elements of both (Batley et al., 2012; Joshi and Houtzager,2012). Where this breaks down, users can often move to opt out of formal provision, instead relying on unregulated and sometimes illicit providers.

Carney (1994) defined quality in terms of efficiency, effectiveness and accountability. Where efficiency referred to the way in which goals are met, effectiveness was the ability to meet goals and accountability was the institutional responsiveness to those affected by one's action. Many argued that delivery of services cost are likely to be high because staff costs absorb a disproportionate amount of the budget (Antenneh, 1995a). Countries of East and West Africa for example spend less than 15% of their budget on operational cost (de Haan and Nissen 1995:Tber 1995) argued that if operational budget are low then staff are in effect being paid for providing little or no services in which case unit cost of delivery was inordinately high.

According to the department of veterinary services Customer Service Charter, it is the responsibility of the department to enhance levels of awareness on its roles, give insight on its core activities and values, provide information on the range of services it offer, the standards it has set, clients, expectations, avenues for remedy where services fall short of the standard and continuous improvement in pursuit of client satisfaction and excellence in its operations. Livestock owners are the ultimate beneficiaries of the service outcome generated through performance management system and was expected to comment on performance of the department.

The relationship between the variables is presented using the conceptual framework overleaf:



2.7 Summary of literature review.

The authors were in agreement that availability of resources and in particular human is an important factor in effective delivery of animal health services. The inputs such as veterinary drugs and equipments are inadequate in most developing countries. Transport for service providers may limit the access of the livestock keepers to animal health services. Improved communication net works may enhance accessibility to resources, dissemination of knowledge and information to the livestock keepers. The authors were also in agreement that professionally qualified service providers were inadequate in developing countries which in turn have forced livestock keepers to seek services from community animal health workers. Effective performance management system was found to an important factor in service delivery. Up down monitoring by the authorities should be combined with down up monitoring and oversight by the community.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methods that were utilized in study. They included research design, target population, sampling and sampling techniques, research instruments for data collection, Validity and reliability of instruments, data collection procedure, and data analysis techniques.

3.2 Research design

The study used a descriptive survey design. A descriptive survey research was designed to obtain permanent and precise information concerning the current status of the variables under investigation and generalizations from the facts observed (Lukesh, 1994). (Kothari, 2004) has stated that a descriptive research provides the description of the information about the variables population. Descriptive survey was used because it was appropriate for fact finding and fields a great deal of information for this study. It also enabled the researcher to gather data at a particular point in time and used it to describe the nature of the existing conditions.

3.3 Target population

The target population for the study was 115,000 people of Garissa sub county who make up 19,167 households of livestock keepers. This is according to 2009 population census.

3.4 Sample size and Sampling Procedure

Sampling is a means of selecting a given number of subjects from a defined population as representative of that population (orodho and Kombo, 2002). Simple random sampling was used to select the households from the 8 locations of Garissa subcounty. The sample size was 190 households. The sample size was calculated using this formula $n = \frac{N}{1 + N(e)^2}$. Where n was the sample size, N was the target population (115,000 people) and e was the level of precision which was 0.05 for social research. The actual sample size from the calculation was 380 households but due to their homogeneity, half of this figure was

considered appropriate. . This meant a sample size of 190 households where 24 households were selected in each location for data collection. The household head was interviewed.

3.5 Research Instruments

The information for this study was gathered by use of one questionnaire for the household representatives who were chosen by the researcher. Mugenda & Mugenda (2003) observes that the use of questionnaire was a popular method for data collection in most disciplines because of the relative ease and cost effectiveness with which they are constructed and administered to large samples.

3.6 Instrument Validity

Validity was the degree to which the results obtained from the analysis of the data actually represented the phenomenon under study (Orodho, 2005). Content validity of the instruments was used to measure the degree to which the items represented the specific area of the study. Validity of research instruments was determined by the researcher who sought opinions from the experts in the field of study especially researcher’s supervisor and lecturer in the school of continuing and distance education in the University of Nairobi and this facilitated the necessary correction of the research instruments.

3.7 Instrument reliability

Reliability had to do with the quality of measurements. In research, the term reliability means “repeatability” or “consistency” of measures (Kasomo, 2006). In the piloting process split-half method was used by administering the questionnaires. Closed-ended items were subjected to a pilot study that utilized a sample of ten households randomly selected. The data values collected were operationalized and the numerical scores were split into two using ‘odd number versus even number items. This process got two sets of values which were correlated using Pearson Product Moment Correlation Coefficient

$$r = \frac{n \sum xy - \sum x \sum y}{\sqrt{\{n \sum x^2 - (\sum x)^2\} \{n \sum y^2 - (\sum y)^2\}}}$$

The correlation coefficient gave a value above 0.75 which was sufficient for these questionnaires to have high pretest reliability (Kasomo, 2006).

3.8 Data Collection Procedure

The study commenced upon receiving clearance and authorization from department of extra mural studies, University of Nairobi. The researcher made familiarization visits to all the selected sites in the sub county prior to the data collection date. The questionnaires were filled in and the researcher collected them.

3.9 Data Analysis techniques

Data was analyzed using both descriptive and inferential statistics. Most data were recorded manually on a questionnaire. The first stage of data processing involved editing and cleaning. This was a systematic process of examining raw data to detect errors and omissions in order to make necessary corrections. Data was examined for completeness, comprehensibility and reliability. The second stage involved data coding and screening in order to select appropriate data for the study. Statistical Package for Social Sciences (SPSS) was used to analyze the data. From this statistics, frequencies and percentages were computed to facilitate comparison of the proportions of the responses made by livestock farmers regarding factors influencing delivery of effective animal health services. . The mean was the measure of central tendency of the four hypotheses that were tested using a one-way Analysis of variance (ANOVA).

3.10 Ethical consideration.

This study first sought permission and clearance from university of Nairobi before conducting the research. The study was carried out for the purpose of research only and any information that was collected from the respondents in the questionnaires remained strictly confidential. The recommendations obtained from the study will go a long way to improve delivery of animal health services.

Table 3.1 OPERATIONALIZATION OF THE STUDY VARIABLES.

Objectives	Independent variable	Dependent variable	Indicators	Measurements tools/level of scale	Types of tools	Tools of analysis
1.To establish the extent to which availability of resources influences animal health service delivery	Influence of resources	Service delivery	Number of resources availed	Nominal	Frequency/ percentages	Measures of central tendency
2.To determine how communication networks influences animal health service delivery	Influence of communication networks	Service delivery	Level of networks coverage	Ordinal	Frequency/ percentages	Measures of central tendency
3.To evaluate how qualification of services providers influences animal health service delivery	Influence of qualification of service provider	Service delivery	Number of qualified service provider	Nominal	Frequency/ percentage	Measures of central tendency
4.To determine how performance management system in government institutions influences animal health service delivery	Influence of performance management system	Service delivery	No of farm visits by service provider. No of treatments. No of feed backs. No of complaints	Nominal	Frequency/ percentages	Measures of central tendency

CHAPTER FOUR
DATA PRESENTATION, INTERPRETATION AND ANALYSIS

4.1 Introduction.

This chapter gives descriptive data analysis and analysis of variance (ANOVA) of the data gathered from the respondents in this study.

4.2 Demographic characteristics.

4.2.1 Gender.

Table 4.1: Frequency and Percentage Distribution of Gender of the Respondents.

	Frequency	Percent
Male	156	82.1
Female	34	17.9
Total	190	100

The frequency and percentage distribution of respondents by gender in Table 4.1: indicates that out of 190 respondents interviewed 82.1% were male followed by 17.9% female. This shows that livestock keeping is a male dominated enterprise.

4.2.2 The Age factor.

Table 4.2: Frequency and Percentage Distribution of the Age of the Respondents.

	Frequency	Percent
25-29	26	13.7
30-35	42	22.1
36-40	43	22.6
41yrs and above	79	41.6
Total	190	100.0

Data obtained from analysis of the age factor in Table 4.2: shows that 41.6% of the respondents are aged 41 years and above, 22.6% of the respondents are aged between 36-39 years, 22.1% of the respondents are aged between 30-35 years and 13.7% of the respondents are aged between 25-29 years. This implies that old people are involved in livestock keeping while young are involved in other enterprises.

4.2.3: Education level.

Table 4.3: Frequency and percentage distribution of education level of the respondents.

	Frequency	Percent
None	167	87.9
primary sch	19	10.0
High sch	4	2.1
Total	190	100.0

The analyzed data on education level of the respondents in Table 4.3: indicates that out of 190 respondents 87.9 % had not attended school, 10 % primary education level and 2.1 % had attended secondary education. According to information in Table 4.3, 87.9% of the

respondents had no education at all, which implies that illiteracy levels are generally high.

4.2.4: Period of years as a livestock keeper.

Table 4.4: Frequency and Percentage Distribution of the period of years as a livestock keeper.

	Frequency	Percent
Below 5years	14	7.4
above 5 yrs	176	92.6
Total	190	100.0

Table 4.4 shows the data analyzed on the period of years respondents have been rearing livestock. According to this data 92.6% of the respondents have reared livestock for a period above 5 years. A trailing 7.4 % have reared livestock for a period below 5 years. This data gives a clear indication that most respondents have experience in rearing livestock.

4.2.5: Need to seek Animal Health Services for livestock in the last 3 months.

Table 4.5: Frequency and percentage distribution of the respondents on the Need to seek Animal Health Services for livestock in the last 3 months.

	Frequency	Percent
Yes	102	53.7
No	88	46.3
Total	190	100.0

Table 4.5 provides information about the Need to seek Animal Health Services for livestock in the last 3 months. 53.7% of respondents agreed that they had the need to seek animal health services while 46.3 % of the respondents did not see the need to seek

animal health services. This demonstrates that there is an interaction between the livestock keepers and the service providers.

4.3: Availability of resources.

The tables 4.6-4.9 give information of the analyzed data from the respondents in frequency and percentage distribution

4.2.1: Government deployment of animal health service providers in the sub county.

Table 4.6: Frequency and Percentage Distribution of the Respondents on Government deployment of enough Animal Health Service providers in the sub county.

	Frequency	Percent
strongly disagree	52	27.4
disagree	103	54.2
Agree	31	16.3
strongly agree	4	2.1
Total	190	100.0

Table 4.6 show the data analyzed from the respondents on Government deployment of enough Animal Health Service providers in the sub county. 54.2% of the respondents disagreed, 27.4% strongly disagreed, 16.3% agreed and 2.1% strongly agreed. This shows that there a shortage of government employed service providers.

4.3.2: Government animal health service providers have adequate veterinary equipment such as syringes and A.I equipment.

Table 4.7: frequency and percentage distribution of the respondents on Government animal health service providers have adequate veterinary equipment.

	Frequency	Percent
strongly disagree	12	6.3
disagree	87	45.8
neutral	26	13.7
agree	61	32.1
strongly agree	4	2.1
Total	190	100.0

Table 4.7 show the data analyzed from the respondents on Government animal health service providers having adequate veterinary equipment such as syringes and A.I equipment 45.8% of the respondents disagreed, 32.1% of the respondents agreed , 13.2% of the respondents were neutral,6.3% strongly disagreed and 2.1% of the respondents2.1%.This implies that the service providers are poorly equipped.

4.3.3: Government provides sufficient drugs and vaccines for treatment of the livestock.

Table 4.8: Frequency and percentage distribution of the respondents on Government providing sufficient drugs and vaccines for treatment of the livestock.

	Frequency	Percent
strongly disagree	13	6.8
Disagree	81	42.6
Neutral	44	23.2
Agree	43	22.6
strongly agree	9	4.7
Total	190	100.0

Table 4.8 show the data analyzed from the respondents on Government providing sufficient drugs and vaccines for treatment of the livestock.

42.6% of the respondents disagreed, 23.2% of the respondents were neutral, 22.6% of the respondents agreed, 6.8% strongly disagreed and 4.7% of the respondents strongly agreed.

This shows that there is insufficient supply of veterinary drugs by the government.

4.3.4 The government has provided enough transport for veterinary staff.

Table 4.9: frequency and percentage distribution of the respondents on Government providing enough transport for veterinary staff.

	Frequency	Percent
strongly disagree	8	4.2
disagree	26	13.7
neutral	64	33.7

strongly agree	92	48.4
Total	190	100.0

Table 4.9 shows the data analyzed from the respondents on Government providing enough transport for veterinary staff. 48.4% of the respondents strongly agreed, 33.7% of the respondents were neutral, 13.7% of the respondents disagreed, 4.2% strongly disagreed. This shows that transport is fairly catered for by the government.

4.4: Performance Management System in Veterinary Department.

The tables 4.10-4.13 give information of the analyzed data from the respondents in frequency and percentage distribution

4.4.1: increase in number of the livestock treated and vaccinated in last five years AHSPS within the locality.

Table 4.10: frequency and percentage distribution of the respondents' awareness about increase in number of the livestock treated and vaccinated in last five years AHSPS within the locality.

	Frequency	Percent
Strongly disagree	13	6.8
disagree	13	6.8
neutral	40	21.1
Agree	120	63.2
strongly agree	4	2.1
Total	190	100.0

Table 4.10 provides information on awareness about increase in number of the livestock treated and vaccinated in last five years by the AHSPS within the locality by the respondents. 63.2 % agree that they are aware, 21.1% of the respondents were neutral,

6.8% of the respondents both disagreed and strongly disagreed respectively, 2.1% strongly agreed. The information from the analyzed data gives a clear indication that there have been increases in number of the livestock treated and vaccinated in the last five years by the AHSPs within the sub-county.

4.4.2: Department of veterinary services for the last 5 years has become more responsive to respondents need.

Table 4.11: Frequency and Percentage distribution of the respondents' information about Department of veterinary services being more responsive to their needs for the last 5 years.

	Frequency	Percent
strongly disagree	12	6.3
disagree	40	21.1
neutral	26	13.7
Agree	107	56.3
strongly agree	5	2.6
Total	190	100.0

Table 4.11 provides information about Department of veterinary services being more responsive to respondents needs for the last 5 years .56.3 % agree that they are aware, 21.1% disagree, 13.7% of the respondents were neutral, 6.3% strongly disagree and 2.6% strongly agree. This shows that the veterinary department is responsive to the livestock keepers needs.

4.4.3 Urgency of AHSP during disease outbreak.

Table 4.12: Frequency and Percentage distribution of the respondents' information about how easy it is to schedule urgent appointment with AHSP when there is a disease outbreak.

	Frequency	Percent
strongly disagree	4	2.1
disagree	60	31.6
neutral	40	21.1
Agree	76	40.0
strongly agree	10	5.3
Total	190	100.0

Table 4.12 shows the data analyzed from the respondents on the urgency of AHSPs during disease out breaks.

48.4% of the respondents strongly agree, 33.7% of the respondents were neutral, 13.7% of the respondents disagree, and 4.2% strongly disagree. This shows that AHSPs respond well to disease outbreak.

4.4.4 Accessing quality advice regarding the use of livestock drugs from AHSPs.

Table 4.13: Frequency and Percentage distribution of the respondents' information about accessing quality advice regarding the use of livestock drugs from AHSPs.

	Frequency	Percent
strongly disagree	20	10.5
Disagree	84	44.2
Neutral	33	17.4
Agree	49	25.8
strongly agree	4	2.1
Total	190	100.0

Table 4.13 shows the data analyzed from the respondents on Accessing quality advice regarding the use of livestock drugs from AHSP 44.2% of the respondents disagree, 25.8% of the respondents agree, 17.4% of the respondents were neutral, 10.5% strongly disagree and 2.1%strongly agree. This implies that AHSPs do not offer adequate advice to the livestock keepers.

4.5: Professional qualifications of the Animal Health Service Providers.

The tables 4.14-4.18 give information of the analyzed data from the respondents in frequency and percentage distribution

4.5.1: trained AHSP is more effective on the job.

Table 4.14: Frequency and Percentage distribution of the respondents about trained AHSP being more effective on the job.

	Frequency	Percent
strongly disagree	13	6.8
disagree	16	8.4
neutral	7	3.7
Agree	130	68.4
strongly agree	24	12.6
Total	190	100.0

Information from the analyzed data shows that 68% of the respondents agree, 12% strongly agree, 8.4% of the respondents disagree, 6.8% strongly disagree and 3.7% remained neutral. This is an indication that training increases efficiency. This shows that professional training of AHSP is important for effective service delivery.

4.5.2: Livestock attended by GOK, AHSPs respond well to treatment.

Table 4.15: frequency and percentage distribution of the respondents' information about livestock attended by GOK, AHSP respond well to treatment.

	Frequency	Percent
Strongly disagree	13	6.8
Disagree	10	5
neutral	4	2.1
agree	95	50.0
strongly agree	68	36.1
Total	190	100.0

Information from the analyzed data shows that 50% of the respondents agree,36.1% strongly agree, 5% of the respondents disagree ,6.8% strongly disagree and 2.1% remained neutral .This shows respondents have a strong general perception that GOK,AHSPs perform their work better.

4.5.3: Livestock Attended by CAHW respond well to treatment.

Table 4.16: Frequency and percentage distribution of the respondents' information about livestock attended by CAHW respond well to treatment.

	Frequency	Percent
strongly disagree	4	2.1
disagree	29	15.3
neutral	30	15.8
agree	120	63.2
strongly agree	7	3.7
Total	190	100.0

Information from the analyzed data shows that 63.2% of the respondents agree, 15.8% of respondent were neutral 15.3% of the respondents disagree,3.7% strongly agree ,2.1% strongly disagree .This shows respondents have a strong general perception that CAHW perform their work much better and that CAHW is important in pastoral areas.

4.5.4: Trust in the Government AHSP when attending to your livestock.

Table 4.17: Frequency and percentage distribution of the respondents' information about Trust in the Government AHSP when attending to your livestock.

	Frequency	Percent
strongly disagree	8	4.2
disagree	7	3.7
neutral	14	7.4
agree	107	56.3
strongly agree	54	28.4
Total	190	100.0

Information from the analyzed data in table 4.17 shows that 56.3% of the respondents agree, 28.4% of respondent strongly agree 7.4% of the respondents were neutral,4.2% strongly disagree ,3.7% disagreed .This shows respondents have a strong general perception that GOK,AHSP perform their work better

4.5.5: Trust in CAHWS when attending to your livestock.

Table 4.18: Frequency and percentage distribution of the respondents' information about Trust in CAHWS when attending to your livestock.

	Frequency	Percent
strongly disagree	5	2.6
disagree	27	14.2
neutral	38	20.0
agree	113	59.5
strongly agree	7	3.7
Total	190	100.0

Information from the analyzed data in table 4.18 shows that 59.5% of the respondents agree, 20.0% of respondent were neutral ,14.2% of the respondents disagree,3.7% strongly agree ,2.6% strongly disagree. This implies that CAHWs are an important factor in animal health service delivery.

4.6: Communication Net Works.

The tables 4.19-4.24 give information of the analyzed data from the respondents in frequency and percentage distribution

4.6.1: seeking information on animal health is important for my livestock.

Table 4.19: Frequency and percentage distribution of the respondents’ information about seeking information on animal health being important for their livestock.

	Frequency	Percent
strongly disagree	9	4.7
disagree	6	3.2
neutral	2	1.1
agree	54	28.4
strongly agree	119	62.6
Total	190	100.0

Information from the analyzed data in table 4.19 shows that 62.6% of the respondents strongly agree, 28.4% of respondent agree, 4.7% of the respondents strongly disagree, 3.2% disagree, 1.1% were neutral.

4.6.2: AHSPs are important source of information.

Table 4.20: Frequency and Percentage distribution of the respondents' information about AHSPs being important source of information.

	Frequency	Percent
strongly disagree	12	6.3
disagree	12	6.3
neutral	33	17.4
agree	98	51.6
strongly agree	35	18.4
Total	190	100.0

Information from the analyzed data in table 4.20 shows that 51.6% of the respondents strongly agree, 18.4% of respondent strongly agree, 17.4% of the respondents were neutral, 6.3% disagree and strongly disagree. This implies that AHSPs are important in passing animal health messages.

4.6.3: Chief's barazas, schools, and mosques are important in passing AH information.

Table 4.21: Frequency and percentage distribution of the respondents' information about chief's barazas, schools, and mosques being important in passing AH information.

	Frequency	Percent
strongly disagree	92	48.4
disagree	84	44.2
neutral	3	1.6
agree	7	3.7
strongly agree	4	2.1
Total	190	100.0

Information from the analyzed data in table 4.21 shows that 48.4% of the respondents strongly disagree, 44.2% of respondents' disagree, 3.7% of the respondents agree, 2.1% strongly agree and 1.6% was neutral. This implies that chief's baraza, schoos and mosque are not used to pas animal health messages.

4.6.4: AHSPs are easily accessible by road.

Table 4.22: Frequency and percentage distribution of the respondents' information about AHSPs being easily accessible by road.

	Frequency	Percent
Valid strongly disagree	4	2.1
disagree	13	6.8
neutral	11	5.8
agree	159	83.7
strongly agree	3	1.6
Total	190	100.0

Information from the analyzed data in table 4.22 shows that 83.7% of the respondents agree, 6.8% of respondents' disagree, 5.8% of the respondents were neutral, 2.1% strongly disagree and 1.6% strongly agrees. This implies that animal health service provider are within reach by road.

4.6.5: AHSPs can be reached by mobile phones.

Table 4.23: frequency and percentage distribution of the respondents' information about AHSPs can be reached by mobile phones.

	Frequency	Percent
strongly disagree	13	6.8
disagree	42	22.1
neutral	14	7.4
agree	102	53.7
strongly agree	19	10.0
Total	190	100.0

Information from the analyzed data in table 4.23 shows that 53.7% of the respondents agree, 22.1% of the respondents' disagree, 10.0% of respondents' strongly agree, 7.4% of the respondents were neutral, 6.8% strongly disagree. This shows that mobile phones are being used as a channel of communication during delivery of animal health services.

4.6.6: Radios and TVs are important source of information on proper animal husbandry.

Table 4.24: Frequency and percentage distribution of the respondents' information about Radios and TVs as important source of information on proper animal husbandry.

	Frequency	Percent
strongly disagree	9	4.7
disagree	59	31.1
neutral	40	21.1
agree	35	18.4
strongly agree	47	24.7
Total	190	100.0

Information from the analyzed data in table 4.24 shows that 31.1% of the respondents disagree, 24.7% of the respondents' strongly agree, 21.1% of the respondents were neutral 18.4% of respondents' agree, 4.7% of the respondents strongly disagree. This implies that radios and television sets are not a major source of extension messages.

4.7 Testing of hypothesis.

This section presents a detailed analysis of association between variables identified in the study .to test the hypothesis, a one-way analysis of variance (ANOVA) was conducted to establish how dependent and independent variables were correlated. In this study, dependent variable was effective service delivery while factors influencing effective service delivery were the independent variables these include availability of resources, performance management system, communication network and professional qualification of service providers.

4.7.1 Testing of hypothesis one.

Hypothesis one, was derived from the first objective of the study which sought to establish the extent to which availability of resources influences delivery of animal health services. The null hypothesis of this study stated that there was no significant association between availability of resources and effective delivery of animal health services. In this hypothesis it was assumed that AHSPs would or would not effectively provide services because of the influence of availability of resources. Effective delivery of animal health services as a dependent variable was cross-tabulated against availability of resources as an independent variable.

Table 4.25: ANOVA for availability of resources and effectiveness of animal health services.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.907	1	.907	.845	.359
Within Groups	201.808	188	1.073		
Total	202.716	189			

Significant $p > 0.05$

Analysis of variance (ANOVA) in table 4.24 shows that F is 0.845 with a P value of 0.359. F value is greater than the P value which is statistically significant and we therefore reject the null hypothesis, which stated that there was no significant association between the availability of resources and effective delivery of animal health services. From these results, we can infer that delivery of effective animal health service is influenced by availability of resources. Other factors combined will go a long way in enhancing effective delivery of animal health services.

4.7.2 Testing of hypothesis two.

The second null hypothesis stated that there was no significant association between the Professional qualification of service providers and effective delivery of animal health services. . This hypothesis was derived from the second objective, which sought to evaluate how professional qualification of service providers influences delivery of animal health services. The assumption underlying this hypothesis was that AHSPs would or would not effectively provide services because of their professional qualification. To test the hypothesized association, dependent variable effective delivery of animal health services was cross-tabulated against independent variable namely professional qualification of service providers.

Table 4.26: ANOVA for Professional qualification of service providers and effectiveness of animal health services.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.549	1	.549	1.713	.192
Within Groups	60.314	188	.321		
Total	60.863	189			

Significant $p > 0.05$

Analysis of variance (ANOVA) for association between qualification of service providers and effective delivery of animal health services was cross tabulated. As seen in Table 4.25, the calculated value $F=1.713$ is more than the P value of 0.192 which is statistically significant. We therefore reject the null hypothesis that there is no significant association between professional qualification of service providers and effective delivery of animal health services. Therefore we can infer that delivery of services is influenced by professional qualification of service provider.

4.7.3 Testing of hypothesis three.

Hypothesis three was derived from the third objective of the study which sought to determine how performance management system in government institutions influences delivery of animal health services. The hypothesis of this study stated that there was no significant association between performance management system and effective delivery of animal health services. In this hypothesis it was assumed that AHSPs would or would not provide services effectively because of performance management system. Effective delivery of animal health services as a dependent variable was cross-tabulated against the performance management system as an independent variable.

Table 4.27: ANOVA for performance management system and effective delivery of animal health services.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.195	1	.195	.195	.659
Within Groups	187.679	188	.998		
Total	187.874	189			

Significant $p > 0.05$

Analysis of variance (ANOVA) in Table 4.26 shows that $F=0.195$ with a P value of 0.659. F value is less than the P value which is statistically not significant. We therefore fail to reject the null hypothesis. From this result we can infer that effective delivery of animal health services is not associated with performance management system. Down up performance monitoring and oversight by the livestock keepers on services providers may not exist in delivery of animal health services.

4.7.4 Testing of hypothesis four.

Hypothesis four was derived from the fourth objective of the study which sought to determine how communication networks influences animal health services. The null hypothesis of this study stated that there was no significant association between communication networks and effective delivery of animal health services. In this hypothesis it was assumed that AHSPs would or would not provide effective animal health services due to the influence of communication networks.

Table 4.28 ANOVA for communication net work and effectiveness of animal health services.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.467	1	.467	.970	.326
Within Groups	90.397	188	.481		
Total	90.863	189			

Significant $p > 0.05$

To test hypothesized association between effective delivery of animal health services as a dependent variable was cross-tabulated against communication networks as an independent variable. The findings of Analysis of variance (ANOVA) Table 4.28 which shows $F= 0.970$ and a P value of 0.326. F value is more than the table value and we therefore reject the null hypothesis which states that there was no significant association between effective delivery of animal health services and communication networks. Therefore we can infer that improved communication networks may enhance animal health service delivery.

4.8 Discussion of the findings

The objectives of the study was to determine how availability of resources, professional qualification of service providers, performance management system and communication networks influence the effective delivery of animal health services. The findings demonstrate that resources such as human, veterinary drugs, veterinary equipments and vehicles are important factors in effective delivery of animal health services. These findings agreed with the views of Arthurs in the literature review who noted that lack of resources had a bad impact on service delivery in developing countries.

Professional qualification of animal health service providers was another key objective in this study. Here two categories of service providers were being analyzed namely the professionally trained and the untrained ones. The findings demonstrate that both category of service providers are active in Garissa sub county and are both fairly rated by the livestock keepers. In the literature review most of the Arthurs argue that Community animal health workers (CAHWs) are an important factor in animal health service delivery. This was confirmed by the findings of the study.

Performance management system in the department of veterinary services was another factor in the study. The study wanted to find out whether the community are aware on their performance monitoring and oversight role on service providers. The findings demonstrated that down up performance monitoring of service providers is weak. The Arthurs in literature review argue that for any effective performance management system, top down and down up performance monitoring must be in place.

The last key factor under study was communication networks. The findings demonstrate that communication networks are very important for effective dissemination of knowledge and information to livestock keepers. This was in agreement with the views of the Arthurs in the literature review.

CHAPTER FIVE
SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND
RECOMMENDATION.

5.1 Introduction.

This study is finalized by chapter five which gives summary of the findings, discussions, conclusions, recommendations and suggestions for further research.

5.2 Summary of the findings.

This study sought to investigate the extent to which, availability of resources, professional qualification of service providers, performance management system and communication networks influence delivery of effective animal health services in Garissa Sub County.

The study was descriptive in design and targeted livestock keepers. The research instruments employed for this study were the questionnaires. Data was gathered from 190 households in Garissa Sub County. From this statistics, frequencies and percentages were computed to facilitate comparison of the proportions of the responses made by livestock farmers regarding factors influencing delivery of effective animal health services. . The mean was the measure of central tendency of the four hypotheses that were tested using a one-way Analysis of variance (ANOVA).

5.3 Discussion of the findings.

Discussions of the findings looked at the descriptive results of the stated objectives and analytical results of the stated hypotheses in this study.

5.3.1 Descriptive results.

From the descriptive analysis, a number of conclusions may be drawn in relation to the study objectives.

a) The first objective was to establish the extent to which availability of resources influence delivery of animal health services. From the analyzed data 54.2% of the

respondents indicated that the government had not deployed enough animal health service providers in the county yet 92.6% of the respondents' in Garissa sub- county have kept livestock for more than 5 years.45.8% from the analyzed data view that the government has not provided enough equipment to facilitate service delivery. In addition, the analyzed data indicated that majority of respondents took issue with the government for not providing sufficient drugs and vaccines for treatment of their livestock. However, from the obtained data 48.4 % of the respondents who were the majority indicated that the government had provided enough transport for veterinary staff. This shows that availability of resources influence the delivery of animal health services. Availability of resources in government institutions go hand in hand in ensuring effective delivery of services by AHSPs.

b) The second objective was to evaluate how professional qualification of service providers influences delivery of animal health services. The study found out that trained AHSPs are more effective in their service this was demonstrated from the analyzed data which indicated that majority of about 68.4% of the respondents believed so.

From the analyzed data the majority at 50 % on one hand indicated that livestock attended to by GOK, AHSPs respond well to treatment and 36.1% of the respondents strongly had the same view. On the other hand the analyzed data also indicate that 63.2% of the respondents indicated that livestock attended by CAHW respond well to treatment which is a contradiction. The analyzed data also indicated that 56.3% of the respondents have trust in the GOK, AHPS when attending to their livestock. On the contrary 59.5% of the study population had trust in CAHWs when attending to their livestock. The information obtained indicates that livestock farmers believe in persons handling their livestock and trust that they are qualified. It is therefore clear that professional qualification of service providers is not perceived to influence the delivery of animal health services by the respondents.

c) The third objective was to determine how performance management system in government institutions influences delivery of animal health services. It was found out that 63.2% of the study population agreed that they were aware of the increase in number of the livestock treated and vaccinated in the last five years by AHSPs, while 13% of the respondents strongly disagree that they are aware of the increment. 56.3% of the study population shows that AHSPs are more responsive to their needs, however 12% of the study population strongly disagreed. Majority of the respondents at 76% are with a view that AHSPs respond urgently during disease outbreaks. Minority at 4% believed the contrary.

In addition 44.2% of the study population believes that accessing quality advice regarding the use of livestock drugs from AHSPs is not up-to-date whereas 20% believe that they offer poor quality advice. These findings demonstrate that introduction of Performance management system in the department of veterinary services has improved delivery of animal services in Garissa Sub County. These strongly demonstrate that there is bottom up performance monitoring and oversight of the service providers by the community.

d) The final objective of the study was to determine how communication networks influences delivery of animal health services. From the analyzed data 62.7 % of the study population value information about their animals and will always make sure that they obtain the right information relating to animal husbandry. 51.6% who were the majority believe that AHSPs are the important source of information .Analyzed data also indicated that about 83.7% are in total agreement that good road networks make accessibility of services easy. Furthermore, 53.7% of the study population indicated that emergence of Information Communication Technology (ICT) has made AHSPs to be accessible through mobile phones .24.7% of the analyzed data believe that radio and Television are important source of information on proper animal husbandry. These findings demonstrate that improved communication networks can enhance the delivery of effective animal health services.

5.3.2 Analytical Results.

The four hypotheses established that there were three significant association between the variables tested and one no significant association between the variables. The independent variable in the first hypothesis was availability of resources and the dependent variable was effective delivery of animal health services. ANOVA was carried out; it yielded a P value of 0.359 and calculated F value of 0.845 confirming there was association between variables tested. The second hypothesis tested the professional qualification of service providers as independent variable and effective delivery of animal health services as a dependent variable. The results indicated a level of significance of 0.192, which was below the calculated F value of 1.713 leading to association between the variables tested. Furthermore, third hypothesis tested the performance management system as independent variable and effective delivery of animal health service as dependent variable. The results from ANOVA indicated a calculated value F of 0.195, which is below the table value of 0.659 leading to no association between the variables tested. Finally, the fourth hypothesis tested was communication networks as independent variable and effective delivery of animal health service as dependent variable. ANOVA was carried out, it yielded a F value of 0.659 which was more than the table value of 0.326 leading to association between the variable tested. It can therefore be concluded that there is significant association between availability of resources, professional qualification of service provider, communication networks and effective delivery of animal health services whereas there is no significant association between performance management system and effective delivery of animal health services.

5.4 Conclusion of the study.

Following the discussion on the findings of the study and statistical tests carried out on the key variables in the preceding chapters, the following are the main conclusions about the factors influencing effective delivery of animal health services in Garissa Sub County. There is significant association between availability of resources and delivery of effective animal health services. This indicates that availing more resources enhances the delivery of effective animal health services. Availability of financial, human, material and technological resources can go a long in improving service delivery. There is

association between professional qualification of service providers and effective delivery of animal health services. Effective service delivery does increase with professional attainment and therefore professional training remains an important factor towards making service providers competent in dealing with emerging animal health challenges and technologies.

As far as performance management system and the delivery of animal health services are concerned, it can be concluded that there is no significant association. This means that the delivery of animal health services is not enhanced by effective performance management system in government institutions. The target population of this study was livestock keepers in Garissa Sub County and it may be concluded that the community is not aware of their performance monitoring and oversight role on service providers. The livestock keepers are the ultimate beneficiary of performance management system in department of veterinary services and there is need to raise their awareness of presence of this important system.

The final objective of the study was to determine how communication networks influence effective delivery of animal health services. Analyzed data also indicated that about 83.7% were in total agreement that good road networks make accessibility easy. 53.7% of the study population indicated that because of the emergence ICT, AHSPs can be accessed through their mobile phones .24.7% of the analyzed data believe that radio and Television are important source of information on proper animal husbandry. There was association between communication networks and service delivery. This demonstrates that improved communication infrastructure may enhance effective delivery of animal health services.

5.5 Recommendations.

Based on the findings of the study, the following recommendations are highlighted:

- i) Effort should be put in place to enhance low income livestock keepers access to animal health service by subsidizing animal health services and bringing animal health institutions close to them.

- ii) Animal health service providers should not only be responsive but efficient in the treatment of animals, so as to establish the trust of the livestock keepers in the services provided by their outfit.
- iii) Livestock farmers also need to be sensitized on the bad impact of livestock diseases on animals, people and the economy, and the need to promptly seek health interventions to forestall disease outbreak and its grave consequences.
- iv) Communication infrastructure should be availed to a large number of rural population in order to enhanced the dissemination of knowledge and information.
- v) There is need to sensitize the community on the importance of education in the sub county. More training facilities should be channeled in the area and mobile training school encouraged. This study demonstrated that the illiteracy in Garissa Sub County is very high and therefore adoption of technologies by the livestock keepers is low.
- vi) Appropriate Policies on service delivery in the department of veterinary services should be reviewed from time to time to enhance the uptake of services.

5.6 Suggestions for further research.

To fill the gaps that were outside the scope and mandate of this study in the area of effective delivery of animal health services, the following areas were identified and therefore suggested for further research.

- i) The findings of this study can be strengthened by further investigation using different research instruments such as focus group discussion and semi structured interviews.
- ii) Performance management system can be taken as a dependent variable in a different research.
- iii) Study should be conducted on the role played by development agencies in promoting livestock farming.

- iv) Study should be conducted on underlying constraints and their symptoms in the delivery of animal health services. There are perhaps other influencing factors like attitude, cost of services, and dissatisfaction among others.
- v) Other factors such as confidence, trust, experience, commitment, and motivation of the service provider may influence the delivery of animal health services and should be investigated.

REFERENCE

- A-AARNET, (2005). Strategic choices and programme priorities for the ASARECA Animal Agriculture Research Network (AFRRI). Ottawa, Canada.
- ANON, (1990). Livestock Development Course Unit 1. External Programme in agricultural, Development, Wye College. University of London, United Kingdom,.
- Antennel, A, (1991). The financing and staffing of livestock services in some countries of East and southern Africa. ILCA livestock policy unit work shop paper 6 ILCA Addis Ababa.
- Armstrong, (2009). Marketing an Introduction retrieved from [www, waterstone.com/amstrong](http://www.waterstone.com/amstrong) April 30 2009. Putting you in control of your own journey through marketing
- Atenneh, A. A. livestock and food production in Africa: challenge and opportunity for the national livestock and veterinary services *Rev. sci. tech. Off.int. Epiz*, vol. 8 (3), 591-606. 1989.
- Bembridge, T.J. Agricultural development problems in three rural areas of Ciskei, 1987, Development
- Cammack, D. (2012). Peri-urban Governance and the Delivery of Public Goods in Malawi, 2009
- Carney, D. (Ed.) (1998). Sustainable Rural Livelihoods: What contribution can we make? DFID, London.
- De Haan , (1993). The delivery of livestock to small holders. A critical evaluation of the delivery to small scale farmer in the developing world.
- De Haan & Nissen, N, (1985) Umali, D.L, (1992). Animal health services in Sub-Africa, public and private roles in the supply of veterinary services delivery in sub-Saharan Africa: the case of privatization. *Rev. sci. tech.* . Development Institute), London, UK, 14 pp.
- FAO, (1997). Principles for rational delivery of public and private veterinary services. In sub-Saharan Africa. 1997 FAO Rome.

- FAO, (1994d). structural adjustment and provision of Agricultural services in sub Saharan Africa.1994 FAO Rome.
- FAO, (1999).The population parameters of rural development, Food and Agriculture Organization, Rome. pp 40-55 1999.
- FAO,(1990). Cost benefit analysis of animal health programme in developing countries, FAO expert consultation, 10- 14 September 1990 FAO, Rome.
- Farm Radio International (FRI), 2008a. Communicating with Radio: What Do We Know? Findings from selected rural radio effectiveness evaluations. African Farm Radio Research Initiative (AFRRI). Ottawa, Canada.
- Farm Radio International (FRI), 2008b. The Economics of Rural Radio in Africa. An Introductory Study into the Costs and Revenues. African Farm Radio Research Initiative (AFRRI). Ottawa, Canada.
- Gakuru, M., K. Winters, and F. Stepman, 2009. Inventory of Innovative Farmer Advisory Services using ICTs. The Forum for Agricultural Research in Africa (FARA).
- Gillwald, A. and C. Stork. 2010. Towards Evidence-based ICT Policy and Regulation: ICT access and usage in Africa. Research ICT Africa. Volume One, Policy Paper 2.
- Gillwald, A., A. Millek and C. Stork. 2010. Gender Assessment of ICT Access and Usage in Africa. Towards Evidence-based ICT Policy and Regulation. Research ICT Africa. Volume One, Policy Paper 5.
- Government of Kenya, (2008). Garissa District Development Plan (2008-2012)
- Government of Kenya,2008. Sessional paper 2008 on National livestock policy.
- Government of Kenya, (2006).Millennium Development Goals (MDGs)-Kenya country report-2005 Released, press note 13 February2007.
- Holden, S, Ashley S, and Bezaley P., Improving the delivery of animal health services in developing countries. a literature Livestock in Development . Crekweme 96p, 1996.
- Holden, S, & Bezaley, P. Improving the delivery of animal health services in developing countries. a literature Livestock in Development .Crekweme 96p, 1996 access and

usage in Africa. Research ICT Africa. Volume One, Policy Paper 2.agricultural extension. *USC Annenberg School for Communication* 5(1): 1–15.

Hüttner, K. 2000. Impact Assessment of a Community-based Animal Health Service Program in Northern Malawi. Thesis in Masters of Veterinary Studies (epidemiology) thesis, Epi Centre, Massey University.

Ibrahim, M.D (1993) .Sudanese paravet show the way appropriate Technology 19(4).

IFAD, (1994). Privatization of Veterinary Services in Sub-Saharan Africa [Module] Livestock Development and Rangelands Management Cluster, IFAD, Rome.

JAHNKE, H. E. (1982). - Livestock production systems and livestock development in tropical Africa, Weitform Verlag Munich.

Kajume & Muthee ,1997.The evaluation of animal health services in the greater horn of Africa. Nairobi Kenya.

Kajume, J. (2001). ‘Delivery of animal health services: Policy Framework’. The Kenya Veterinarian. Nairobi Kenya.

Kasomo, D. (2006). Research methods in humanities and education.Kijambe printing press Nairobi.

Kombo, D.K.\$Tromp, D.L.A,(2006).Proposal and Thesis Writing,Nairobi:Pauline publication Africa.

Kothari, C.R (2003): Research methods &Techniques K Gupta, New Delhi.

Kotler, (2008). Principles of Marketing 14th edition. Retrieved from <http://www.perspective mid/kotler-mark.Millennium edition PDF.principles of marketing>.

Leonard, D, (1982).The supply of veterinary services: Kenya lesson, Agricultural Administration and extension.

LID, (1999). Livestock in Development. Strategies for Improving DFID’s Impact on Poverty Reduction: A review of best practice in the livestock sector. Livestock in Development, Crewkerne, Somerset.

McCorkle, C.M, 2002. Community-based Animal Health Workers: The Story So Far. In: The IDL Group (Eds) Community Based Animal Health Workers -Threat or Opportunity, the IDL Group, Crewkerne (in print).

- .Mettters ,et al, (2006).Management issues associated with service delivery.
- Milangwa& Ksauzi System approach to animal health services delivery in sub Saharan Africa; concept development.
- Milangwa, Chilonda& Pandey .Veterinary Ethics in the liberated in the liberalized market: the Zambian environment. Rev sci tech. off. Int. Epiz; 16(3), 739-745, 1997
- Mugenda & Mugenda, (2003). Research methods quantitative and qualitative approaches. Nairobi: Acts press.
- Mutambara J. , Mano R. , Chatikobo P.& Masvong J. Proximate determinants of the effective demand for animal health services in smallholder sector of Zimbabwe Livestock Research for Rural Development 24 (10) 2012 Retrieved March 8, 2014, from <http://www.lrrd.org/lrrd24/10/muta24178.htm> Nairobi, Kenya.
- Nalitolela, S. Allport, R. Ndanu, ., Shongon, L, 2001. Impact of animal health improvement on food security of a pastoralist community in Simanjiro District. Proceedings of the 19th Tanzania Veterinary Association Annual Scientific Conference, Arusha, December 2001.
- Odeyemi, I.A, 1996. Location-allocation modeling of veterinary services in Africa: A case study of Zimbabwe. Institute of Ecology and Resource Management, Edinburgh University
- .
- Odhiambo, O. Holden, S.& Ackello-Ogutu, C. 1998. OXFAM Wajir Pastoral Development Project: An Economic impact assessment. Oxfam UK/Ireland, Nairobi
- Orodho& Kombo(2002).The role of training and development.Kanezja Publishers,Kenya.
- PRITCHARD ,W.R. (1988). Veterinary education in Africa: past, present and future. J. vet. Rome, Italy.
- Sachs,Jeffrey, D,(2005).The end of poverty, How we can make it happen in our lifetime.Londo penguin books suryahadi,Asep,Daniel Suryadama &Sudarno Sumarto.2006.Economic Growth and poverty Reduction in Indonesia: The effects of location and sect oral components of growth.:

- Schillhorn Van veen, T.W,(1984).Observation on animal health especially to identify and overcome constraints in the subhumid zone of west Africa, in livestock development in sub-Saharan Africa: constraints prospects and policy,westview press Boulder San Francisco and London.
- Snenglig, (1993). Regional management of a system for distribution and selling veterinary treatments in Thailand villages, livestock services for smallholders:A critical evaluation of animal health and production services to the small scale farmer in the developing world, proceeding of an international seminar Yogyakarta Indonesia 15-21 November 1992.
- Umali , D. L & Schwartz, L. Public and Private Agriculture extension, beyond traditional frontiers, World Bank Discussion Paper 236, 1994 The World Bank, Washington DC.
- Upton, M. The role of livestock in Economy Development and Poverty reduction; Pro poor Livestock policy initiative. FAO PPLP workings paper no 10. 1-66, 2004 2.
- Veterinary Department,2008.North Eastern Province annual report 2008.
- Walshe, M. J. Livestock Support services, paper presented at Economic Development Institute Seminar on Organization of African Livestock services, Paris 25-27 May 1987. With reference to Africa. Report of a technical consultation (25-27 March 1997),
- Odeyemi, I.A., 1996. Location-allocation modeling of veterinary services in Africa: A case study of Zimbabwe. Institute of Ecology and Resource Management, Edinburgh University
- Odhambo, O., Holden, S. and Ackello-Ogutu, C., 1998. OXFAM Wajir Pastoral Development Project: An Economic impact assessment. Oxfam UK/Ireland, Nairobi
- Orodho and Kombo(2002).The role of training and development.Kanezja Publishers,Kenya.
- PRITCHARD W.R. (1988). - Veterinary education in Africa: past, present and future. J. *vet.* Rome, Italy.
- Sachs,Jeffrey D.(2005).The end of poverty, How we can make it happen in our lifetime.Londo penguin books suryahadi,Asep,Daniel Suryadama &Sudarno

Sumarto.2006.Economic Growth and poverty Reduction in Indonesia: The effects of location and sectoral components of growth.:

Schillhorn Van veen, T.W.(1984).Observation on animal health especially to identify and overcome constraints in the subhumid zone of west Africa, in livestock development in sub-Saharan Africa: constraints prospects and policy,westview press Boulder San Francisco and London.

Snenglig (1993) Regional management of a system for distribution and selling veterinary treatments in Thailand villages, livestock services for smallholders:A critical evaluation of animal health and production services to the small scale farmer in the developing world, proceeding of an international seminar Yogyakarta Indonesia 15-21 November 1992.

Umali , D. L. and Schwartz, L. Public and Private Agriculture extension, beyond traditional frontiers, World Bank Discussion Paper 236, 1994 The World Bank, Washington DC.

Upton M, The role of livestock in Economy Development and Poverty reduction; Pro poor Livestock policy initiative. FAO PPLP workings paper no 10. 1-66, 2004 2.

Veterinary Department,2008.North Eastern Province annual report 2008.

Walshe M. J Livestock Support services, paper presented at Economic Development Institute Seminar on Organization of African Livestock services, Paris 25-27 May 1987. With reference to Africa. Report of a technical consultation (25-27 March 1997),

APPENDICES.

APPENDIX 1 : LETTER OF TRANSMITTAL.

JACKSON KINYUA.

GARISSA COUNTY VETERINARY SERVICES.

P.O BOX 295.

GARISSA.

28TH JANUARY 2014.

Dear Respondent.

I am a post graduate student at University of Nairobi, Garissa extra mural Campus pursuing a Masters Degree in Project Planning and Management course. Am carrying out a research on factors that influence delivery of animal health services delivery in Garissa Sub County. You have been selected for this study as a respondent. Please answer the questions as truly as possible.

The results of this study will be used for academic purposes only. I do request for your cooperation and support. Any information collected will be treated with utmost confidentiality.

Yours Faithfully,

JACKSON MWAI KINYUA.

APPENDIX 11 : SURVEY QUESTIONNAIRE

Section A: Participant profile

1. Please indicate your gender.

Male

Female

2. What is your age bracket?

18-24

25-29

30-35

36-40

41 years and above

3. What is your highest academic qualification?

Primary school

High School

College

None

4. Which type of livestock do you keep?

Camel

Cattle

Goats

Sheep

None

5. For how long have you reared the livestock?

Below 5 years

Above 5 years

6. Have you ever had the need to seek animal health services for your livestock (in the last 3 months).

Yes

No

SECTION B

TO WHAT EXTENT DOES AVAILABILITY OF RESOURCES INFLUENCE DELIVERY OF ANIMAL HEALTH SERVICES?

Please mark (v) on the answer based on the following scale.

5= strongly agree 4=Agree 3= neutral 2=disagree 1= strongly disagree

No.	Statement	strongly agree	agree	neutral	disagree	strongly disagree
1	The government has deployed enough Animal Health Service Providers in the sub County					
2	Government Animal Health Service Providers have adequate veterinary equipments such as syringes, A.I equipments.					
3	The government provides sufficient drugs and vaccines for treatment of the livestock					
4	The government has provided enough transport for veterinary staff					

SECTION C

To what extent does performance Management system in veterinary department influence delivery of animal health services.

(Performance management system is geared towards customer satisfaction and staff motivation)

Please mark (v) on the answer based on the following scale.

5= strongly agree 4=Agree 3= neutral 2=disagree 1= strongly disagree

No.	Statement	strongly agree	agree	neutral	disagree	strongly disagree
1	For the last five years there has been an increase in the number of livestock treated and vaccinated by AHSPS within my locality.					
2	.For the last five years there has been an increase in the number of demonstrations and farm visits by AHSPS within my area.					
3	For the last 5 years department of veterinary services has become more responsive to our needs					
4	It is easy to schedule urgent appointment with AHSP when there is a disease out break					
5	It is easy to access quality advice regarding the use of livestock drugs from AHSPs					

SECTION D

TO WHAT EXTENT DOES QUALIFICATION OF AHSP INFLUENCE DELIVERY OF ANIMAL HEALTH SERVICES ?

Please mark (v) on the answer based on the following scale.

5= strongly agree 4=Agree 3= neutral 2=disagree 1= strongly disagree

No	Statement	strongly agree	agree	neutral	disagree	strongly disagree
1	A trained Animal Health Service Provider is more effective on the job					
2	CAHWS are an important factor in Animal Health Service delivery					
3	Livestock attended by GOK animal health service provider respond well to treatment. .					
4	Livestock attended by CAHW respond well to treatment					
5	You have a lot of trust in government AHSP when attending to your livestock					
6	You have a lot of trust in CAHW when attending to your livestock					
7	The government AHSP is easily available when needed.					

SECTION E

TO WHAT EXTENT DOES COMMUNICATION NET WORK INFLUENCE DELIVERY OF ANIMAL HEALTH SERVICES?

Message/information passed to the pastoralists includes vaccination/treatment dates, field days/demonstrations, disease outbreaks, quarantines

Please mark (v) on the answer based on the following scale.

5= strongly agree 4=Agree 3= neutral 2=disagree 1= strongly disagree

No.	Statement	strongly agree	agree	neutral	disagree	strongly disagree
1	Seeking information on animal health is important for my livestock.					
2	The Animal Health Service Providers are important source of information					
3	The chief's barazas, schools and mosques are important in passing animal health information.					
4	AHSPs are easily accessible by road.					
5	AHSP can be easily be reached through their mobile phones					
6	Radios are important source of information on proper animal husbandry					
7	Televisions are important source of information on proper animal husbandry					

Thank you for your time in filling the questionnaire.

APPENDIX III

PERMISSION LETTER



UNIVERSITY OF NAIROBI
COLLEGE OF EDUCATION AND EXTERNAL STUDIES
SCHOOL OF CONTINUING AND DISTANCE EDUCATION
DEPARTMENT OF EXTRA MURAL STUDIES
GARISSA EMC

GARISSA EMC
P.O. BOX 1207

Our Ref:
Telephone

GARISSA.
DATE 8/5/2014

Dear sir/madam,

REF: JACKSON MWAI KINYUA, REGISTRATION NO. L50/66247/2013.

The above named student is from University of Nairobi undertaking studies leading to the award of Master of Arts in Project Planning and Management. He is seeking information to examine factors influencing delivery of effective animal health services in Garissa sub county Kenya. This interview is being conducted for the purpose of research and the information obtained will be kept strictly confidential.

Your cooperation and active participation will be highly appreciated.

Yours faithfully,

A handwritten signature in blue ink is written over a purple circular stamp. The stamp contains the text: "UNIVERSITY OF NAIROBI", "P.O. BOX 1207", "GARISSA", "DATE", and "GARISSA EXTRA MURAL CENTRE".

Mr. Mohamed A. Noor
Centre Coordinator
Garissa Emc