THE PERFOMANCE OF HIDES AND SKINS SUB – SECTOR AND ASSOCIATED ECONOMIC LOSSES IN WAJIR COUNTY, KENYA

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DECLARATION

This thesis is my original work and has not been presented for a degree award in any other University

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To my family members including mother - Esther, sister - Elizabeth, daughter – Bridgid Wangui and wife - Mary whose inspiration kept me going while conducting my research despite the many challenges faced.

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ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of Variance
ASALs	Arid and Semi-Arid Lands
CDR	Community Disease Reporter
CDVS	County Director of Veterinary Services
CFC	Common Fund for Commodities
CIDP	County Integrated Development Plan
COMESA	Common Market for Eastern and Southern Africa
COTANCE	Confederation of National Associations of Tanners and Dressers of the European Community
DVS	Director of Veterinary Services
GDP	Gross Domestic Product
GOK	Government of Kenya
HSI	Hides and Skins Inspector
KARI	Kenya Agricultural Research Institute
KES	Kenya Shilling
KGS	Kilograms
KMD	Kenya Meteorological Department
KNBS	Kenya National Bureau of Statistics
KWS	Kenya Wildlife Service
LLPI	Leather and Leather Products Institute
MOLD	Ministry of Livestock Development
NDMA	National Disaster Management Authority

NESC	National Economic and Social Council
SPSS	Statistical Package for the Social Sciences
UNIDO	United Nations Industrial Development Organization
USD	United States Dollar

DEFINITION OF TERMS

Air/ Suspension drying – Where hides and skins are dried using frames or suspended in a structure, it is the most common and effective method of preservation by drying. Like all procedures applied to hides and skins it should be done in the shade and this is commonly referred to as "shade drying". Suspension drying of hides and skins involves cutting of holes in the periphery and attaching these to a frame (figure). It is important that the frames are big enough, which means at least 1×1 m^2 for skins and 2.5×2.5 m^2 for hides. Normally, the large frames suitable for cattle hides are sub-divided into quarters so they may also be used to dry skins, (Leach, 1995).

Attitude - According to (Merriam-Webster's Collegiate Dictionary, 2012), attitude is the way you think and feel about someone or something. In the context of this study, attitude on the hides and skins resource among pastoralist communities on the importance of hides and skins resources was determined and whether it served to influence on the levels of non-collection.

Awareness - According to (Oxford Advanced Learners Dictionary 2014), Awareness is concern about and informed interest in a particular situation or development; in line with this study, awareness on whether the hides and skins resource is of importance was determined and whether this influenced the levels of non-collection.

Banda– Housing or shed used to dry hides and skins; it should have a proper roof to avoid rain water coming into contact with the hides and skins and well ventilated to allow loss of moisture from hides and skins by evaporation (Kenya gazette, 1999).

Brand marks – An identity mark applied on the skin of an animal by burning, freezing or painting with corrosive materials or tattooing (Leach, 1995).

Cultural factors - According to (Helman, 1990), culture encompasses the set of beliefs, moral values, traditions, language and laws (or common behaviour) held in common by a nation, a community, or other defined group of people. In the context of this study, cultural factors included language**,** pastoral way of life**,** gender roles and religion in the pastoral set up.

Cuts – Knife damage on the flesh side of a hide caused by improper flaying or fleshing (Leach, 1995).

Flay cuts - Flay cuts are knife marks on the flesh side of hides and skins that are caused by careless use of the knife during the removal of the skin from the carcass. Usually, the cuts penetrate well into the corium structure where they result in weak areas. In severe cases the cuts may extend right through the full thickness of the skin. Even where they do not cut right through the skin, they can invariably be seen from the grain side since the loss of substance means less pressure during certain leather making processes, e.g. vacuum drying. For this same reason, flay cuts are also often highlighted by roller coating finishing operations, (Leather international, 2008).

Flesh side – Where the hide or skin was detached from the animal opposed to the grain side, (Merriam-Webster's Collegiate Dictionary, 2012). In this study animal shall mean goats, sheep, cattle and camels.

Green hide -Afresh hide or skin immediately after flaying (Reid, 1999).

Hair side – Side where hair is found on animal hide or skin (Elliot, 1985).

Haram – An Arabic term meaning forbidden by Islamic faith.

Hide – The outer covering of a mature or fully grown bovine, equine, camelids or other domestic or wild animal of the larger kind (Cap. 359, Hide, Skin and Leather Trade, 2006).

Parasite - An organism that is physiologically or metabolically dependent on another organism it exploits the host for survivability during one or several of its stages in life (Elsheikha and Khan, 2011).

Pastoralism –It is the practice of herding as the primary economic activity of a society (Merriam-Webster's Collegiate Dictionary, 2012). This study mainly confines to four species i.e. camels, goats, cattle and sheep.

Performance–In the context of this study, performance meant how hides and skins trading activities were carried out in Wajir County.

Poor pattern – An asymmetric skin or hide due to bad opening cuts or distortion during drying because of uneven tension (Tesfay *et al.*,2015).

Production factors - The factors of production are resources that are the building blocks of the economy; they are what people use to produce goods and services. Economists divide the factors of production into four categories: land, labor, capital, and entrepreneurship (Rittenberg, 2008).

Skin – The skin of an animal, especially the thick tough skin or pelt of small stock (Hansen and Ockerman, 2000).

Socio-cultural factors - According to (Merriam-Webster's Collegiate Dictionary, 2012) socio-cultural factors are customs, lifestyles and values that characterize a society. Some examples are religion, attitudes, economic status, class, language, politics and law. In the context of this study, socio-cultural factors shall refer to religious and cultural festivals among the pastoral communities of Wajir County.

Sun drying – Perhaps the oldest and certainly the crudest method of preservation consisting of placing the hides or skins on the ground flesh side up. After a few days in direct sunlight the hide

or skin is removed and stored. Despite being practiced for such a long time the procedure is widely misunderstood (Leach, 1995).

Tube flaying – Where the cut along the belly line is omitted and the skin is pulled off as a tube or a sock. This is especially for small domesticated animals and small stock e.g. sheep and goats (Leach, 1995).

Veininess – Veiny leather is a result of blood vessels in the skin where blood is not completely drained through proper bleeding (Elliot, 1985).

Wet salting – Also called stack salting, it is the conventional method of salting hides and skins which has been used for very many years and is still very popular in many parts of the world. It consists of making piles or stacks of hides and skins with layers of salt in between them. It is important to place the pieces with the flesh side up so that salt can dissolve and lay on the surface before diffusing in. There should be a generous layer of salt on the floor beneath the first hide. Though very little salt penetrates the epidermis (in contact with the floor) the salt will attract some moisture from the surface layer (Leach, 1995).

ABSTRACT

The African problem with hides and skins value chain comes from; poor quality of raw materials, lack of efficient marketing structures, lack of incentives for quality production and export of raw and semi processed hides and skins. Hides and skins trade is a major foreign income earner for Kenya. Despite this it is estimated that hides and skins are lost from non-collection in the Northern Kenya areas culminating to low returns, ultimately leading to high levels of poverty. This situation may be as a result of socioeconomic and production factors which necessitated this study.

The study adopted descriptive survey research design. The target population was 88,574 households in the entire Wajir County. Purposive sampling was used to select a sample size of 106 composed of 92 flayers and 14 traders across Wajir County. Data was collected by use of questionnaires with both closed and open-ended questions. The questionnaire was pilot-tested on 10 flayers and 2 traders in Elnur, Beletulamin, Tulatula and Boa villages which did not participate in the main study and have the same characteristics as the study area in terms of production of hides and skins. An alpha Cronbach's coefficient of 0.884 was obtained. Data analysis was done by inferential and descriptive statistics. The Statistical Package for the Social Sciences (SPSS) version 22 was used for analysis. Hypotheses were tested using multiple regression tests while the number of non-collected hides and skins was obtained using *Bayes* Theorem. All tests were computed at α=0.05.

The most active age bracket in flaying of hides and skins in Wajir County was 46-65 years comprising up to 42 per cent. Similarly, this was still the most active age bracket in hides and

skins trading comprising of 86 per cent. Up to 90 per cent of the flayers were male while females comprised of 10 per cent. There was no female trader among the ones interviewed. The duration of hides and skins trade among the traders was similar for three classes i.e. 6 – 10 years, 11 – 15 years and 16 – 20 years with 29 per cent while only 13% of the traders had an experience of 21-25 years. The study indicated that about 70 per cent of the total respondents had no formal education. The prices of hides and skins in Wajir County varied between species and method of curing (preservation) used. The wet salting method of curing attracted the highest prices although air and sun dried hides and skins were over 70 per cent of total hides and skins produced in goats, sheep and cattle.

Using *Bayes* theorem the study indicated that Wajir County lost Kshs.3.84 million annually from non-collected hides and skins while over Ksh.400, 000.00 was lost in taxes. Other ways in which money is lost is through branding whereby the County lost Kshs.1.64 million annually. From the study, branding was the major defect that caused losses in hides and skins in the County. During the drought period that lasted from 2009 to 2011 Wajir County lost over Kshs.156 million from fallen (dead animals) hides and skins. Religious and cultural festivities affected the quantities of hides and skins collected and delivered for trade. Religious festivals had the greatest increase as during these festivities livestock are slaughtered in masses.

The most important factor that affected hides and skins trade in Wajir County was mode of supply with $p = 0.001$ this was the actual quantities delivered to traders either from collectors, flayers or even individual pastoralists. Quality was not a determinant as to whether the trader would purchase the hide and skin or not but only at how much he would buy it. Training was the

most important factor influencing production of quality hides and skins with a p = 0.000. This was so because the other factors like tools for flaying, structure of storage and effectiveness in collection would be done more efficiently if the person had been trained. As for factors of production, capital was the most important factor with a p = 0.025. According to the study, capital influenced the quantities of hides and skins that a trader or collector could purchase. Capital also had influence on quality because better quality hides and skins fetched better prices. In conclusion, more vigilance should be practiced to collect hides and skins effectively as the study has shown that indeed non collection leads to great losses. The youth and more women may be included in these activities as they would empower them economically. Training should be considered to improve the quality of hides and skins so as to fetch better prices in the market, reduce activities leading to production of poor quality hides and skins like branding and poor animal husbandry. The County Government should consider improving infrastructure and coming up with policies to improve hides and skins trade.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Leather is one of the most widely traded commodities in the world. The leather and leather products industry plays a prominent role in the world's economy, with an estimated global trade value of approximately USD 100 billion per year (UNIDO, 2010). Production of hides and skins and pre-tanning are practiced throughout the world; this notwithstanding, production of finished leather and manufacture of finished leather products are much less widespread. The term "hide" refers to the external surface layers of a large animal (cattle, camel), whereas "skin" refers to the external surface layers of a small animal (e.g. sheep, goat,) (Leach, 1995). Two thirds of the worlds finished leather comes from about ten countries with four being dominant i.e. Italy, Republic of Korea, China and India (UNIDO, 2010). Leather from the world perspective comes from various species as follows; adult bovines take 65 per cent, 16 per cent comes from sheep, 9 per cent from goats, and another 9 per cent from calves, the rest account for 1 per cent (UNIDO, 2010). The leather produced is then utilized as follows; 41 per cent used for footwear, 19 per cent used for other leather goods e.g. belts, handbags and wallets, 17 per cent used for furniture, 13 per cent used for car interiors, 8 per cent used for garments and the rest account for 2 per cent (COTANCE, 2012).

The African problem with the hides and skins value chain comes from; poor quality of raw materials, lack of efficient marketing structures, lack of incentives for quality production of hides and skins and export of raw and semi processed hides and skins (Jabbar *et al.*,2002). Adequate

policy to support the industry is needed to curb export of raw and semi processed hides and skins and to discourage import of poor quality and second hand leather products. Tax holidays and incentives should be considered to revive the industry including manufacturing incentives for example, power cost reduction and waivers (Jabbar *et al.*, 2002).

Kenya's projections towards achievement of vision 2030, the leather industry was categorically identified as one of the under exploited sectors that can propel this nation towards achievement of this endeavor (NESC, 2010). In the same Vision 2030 development framework among the three pillars, the economic pillar is aimed at achieving an average Gross Domestic Product (GDP) growth rate of 10 per cent per annum. Within this pillar, agriculture has been identified as one with the greatest potential for transformation. Kenya will raise incomes in agriculture, livestock and fisheries by processing and thereby adding value to the products before they reach the market (GoK, 2005).

Pastoralism is the key agricultural production system in dry lands. As dry lands constitute nearly half of the land area of Sub-Saharan Africa, pastoralism is of particular importance for the continent and in some countries; pastoralists even represent the majority of the population. With limited access to water, competing rights to land, and increased access to small arms, fatal inter-tribal conflict arises when pastoralists from one tribe enter the territory of another (Leff, 2009).

Livestock hides and skins contribute a significant proportion of domestic leather. They are also an important source of foreign exchange earnings for Kenya and other African countries. The full potential of hides and skins production in Northern Kenya has not been realized due to their

poor quality leading to low demand in both domestic and export markets. It is apparent that inefficient collection of hides and skins is such a hindrance because not only does the country lose resources in terms of lost raw material, but also jobs that could otherwise engage the largely unemployed youthful Kenyan population (Wayua and Kagunyu, 2008).

Kenya's economy is based largely on agriculture, which contributes over 25 per cent of the GDP (Economic Survey, 2013). Agriculture also provides raw materials for agro-industries; accounting for about 70 per cent of all industries. Over 80 per cent of the country's population relies on agriculture for employment and general livelihood. According to (Elisabeth and James, 2009) the livestock industry contributes 42 per cent of the agricultural (AGDP) and 10-15 per cent of total GDP. It employs over 50 per cent of the agricultural labor force, 90 per cent of the 7 million people in Arid and Semi-Arid Lands (ASALs) and contributes 95 per cent of family income and employs about 5 million people in high and medium potential counties.

The sector provides milk, meat, wool, hair, manure, hides and skins, animal traction, insurance against crop failure, as well as, fulfilling a range of socio-cultural services. Over 70 per cent of the National livestock herd is kept in the (ASALs). The livestock products (meat, milk, eggs, wool hides and skins) on average account for 28 per cent of agricultural GDP of Sub –Saharan African countries (Mwinyihijah and Magero, 2009). In Kenya hides, skins and leather industry are estimated to contribute about 4 per cent to the Annual GDP (Mwinyihijah and Magero, 2009). Hides and skins trade is a major foreign income earner for Kenya. The bulk of the hides and skins exported and utilized for leather tanning in the country are produced in the arid and semi-arid areas of Kenya (Eric *et al*, 2015).

1.2 Economy of Wajir County

The main economic activity in Wajir County is pastoralism with some agro- pastoralism being practiced in the Northern part of the county. The large tracts of land in the county provide the grazing pastures for the large camel and cattle herds present in the county. The main types of livestock are cattle (mostly Boran type and dairy crosses), sheep, goats (predominantly Somali goats), camels and donkeys. Poultry keeping is more pronounced in Wajir Town. According to the (KNBS, 2009) population and housing census, the livestock population in Wajir County was as follows; Cattle - 794,552, Sheep - 1,406,883, Goats - 1,866,226, and Camel - 533,651.

The production of milk is estimated at 3,875,940 liters per annum (Wajir CIDP, 2013) while reported meat production is estimated at 1,692,440 Kgs per annum (Wajir Slaughter report, 2014). The county has an inter-censual growth rate of 3.22 per cent which is higher than the national population growth rate of 3.0 per cent. The average county population density stands at 13 persons per square kilometer**.** Wajir County Integrated Development Plan (Wajir CIDP, 2013).

The main source of water is the seasonal Ewaso Nyiro River. Other sources of water include boreholes, shallow wells, pans and dams for human and livestock consumption. Lake Yahud, which is an underground and permanent lake, situated on the periphery of Wajir town provides water for wildlife and quarry activities although the water is saline and not safe for drinking. There are 14,360 shallow wells, 206 water pans and 98 bore holes. The major users of water are livestock, which uses 53 per cent while for domestic use is 30 per cent (Wajir CIDP, 2013).

Rain-fed agriculture is practiced on a small scale basis in the higher altitude regions. Groundwater harvesting from numerous wells, earth pans, dams and boreholes is also undertaken due to the high water table. The county has mineral resources such as limestone and sand. It also has solar and wind energy potential (Economic Survey, 2013).

1.3 Climatic Conditions of Wajir County

The county experiences annual average relative humidity of 61.8 per cent which ranges from 56 per cent in February to 68 per cent in June. The county does not experience frost conditions. The county receives an average of 240 mm precipitation annually or 20 mm each month. There are 24 days annually in which greater than 0.1 mm of precipitation (rain, sleet, snow or hail). June is the driest month with all days receiving an average of less than 1 mm of rain while April is the wettest month with an average of 68 mm of rain across 6 days. The higher areas of Bute and Gurar receive higher rainfall of between 500mm and 700mm. The average temperature is 27.9 °C. The range of average monthly temperatures is 3.5°C. The warmest months are February and March with an average of 36°C while the coolest months are June, July, August and September with an average low of 21 °C (KMD Wajir County Office, 2010).

1.4 Administrative sub divisions (Sub county, divisions, locations)

Administratively, the county comprises of eight sub-counties namely Wajir East, Tarbaj, Wajir West, Eldas, Wajir North, Buna, Habaswein and Wajir South. It‘s further divided into 29 divisions, 142 locations and 172 sub-locations.

1.5 Statement of Problem and Justification

1.5.1 Statement of Problem

Despite the large quantities of hides and skins produced in Wajir County, quantities of unknown magnitude are left uncollected due to unknown factors that the study intended to investigate. These lost quantities implied major financial and economic losses that led to poverty and dependency among the pastoral communities. The amount of hides and skins produced from the ASALs areas of Kenya are immense considering the livestock population in these areas. The estimated quantities of meat obtained from the ASALs in Kenya translated to about 90 per cent of meat production in Kenya. This reflects the quantities of hides and skin quantities produced in these areas. These hides and skins are in the hands of subsistence farmers and pastoralists (EPZ, 2005).

1.5.2 Justification of the study

The research work was necessitated by the following factors

- It is estimated that 14 per cent of hides, 34 per cent of sheepskins and 29 per cent of goat skins is lost due to non-collection in the Northern Areas (Muthee, 2008).
- The factors leading to deterioration of quality of hides and skins from North Eastern, Kenya can be easily addressed.
- The amount of economic gain to the country from better quality hides and skins, considering that currently the country earns an estimated 4 billion from export of semi – processed hides and skins and leather goods (Mwinyihijah, 2011).
- There is still the wide misconception on the importance of the hides and skins, as many still consider it no more than just a meat by product (Adugna, 2004).

1.5.3 Objectives

General Objective;

- ❖ To investigate the performance of the hides and skins sub-sector and associated economic losses in Wajir County, Kenya.

Specific objectives;

i. To quantify the economic value of uncollected hides and skins produced in Wajir County.

ii. To identify the level of youth and gender engagement

iii. To identify socio-cultural factors affecting non-collection of hides and skins in Wajir County.

iv. To identify production factors affecting the quality of hides and skins.

v. To determine the knowledge, attitude and practice of the Wajir Pastoral communities regarding the economic importance of hides and skins value chain.

CHAPTER TWO

LITERATURE REVIEW

2.1 Background of Leather Industries and their economic potential

The global leather industries have been in existence for over 400 years and during that time technologists have been concerned to impose stability to the raw hides and skins. The global leather industry exists because meat eating exists, with cattle taking the largest share of the species utilized for leather making. Over 300 million cattle form the global cattle kill per annum; the rest include goats, sheep, pigs and others (Covington, 2009). In comparison with global production, there was a slight increase in production from 2003 to 2009. Since then, production figures have been on a slight decline. The increase was triggered by the measures that the government of Kenya had taken to promote hides and skins trade including increasing tax on export of raw hides and skins.

The decline in production has been caused by saturation in the export market especially in China which was a great importer of hides and skins from Kenya. Hides and skins and their derived products are a major source of export earnings for many developing countries. Indeed, the total value of trade in hides and skins, leather and leather products exceeds that of meat, the commodity of which hides and skins are by-products. Over the past twenty years quantities of hides and skins produced in developing countries increased and the commodity has been processed to higher levels prior to export. Thus the value of exports of hides and skins and derived products increased markedly (FAO, 1994).Nevertheless, there is scope for any developing countries to gain increased benefits from these commodities. Considerable losses are

incurred from damage to hides and skins as a result of livestock management practices as well as treatment after slaughter. In addition, considerable wastage occurs through the non – collection of flayed hides. These losses from damage and wastage have been estimated as totaling to as much as US$ 800 million a year in Africa (FAO, 1994).

Table 2.1: Kenya's hides and skins production in comparison to Africa and the globe (figures in thousands of pieces)

Area	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Bovine Hides												
Kenya	2097	2355	2665	2867	2967	3053	3220	3080	3053	3033	3112	3171
Africa	28298	30608	32287	35133	35602	37126	37742	38003	39278	39803	40759	42164
Globe	319739	330070	334312	342574	368600	349614	351986	353833	353612	355253	366385	371117
Sheep skins and lamb skins												
Kenya	2989	2951	3051	2901	2801	2701	2776	2801	2901	1781	2212	2156
Africa	84174	88513	91589	99241	100621	101505	103631	109454	108499	109109	110849	112439
Global	511422	518272	530852	547324	554147	556786	539514	547733	539371	546282	550031	553368
Goat skins and kid skins												
Kenya	3657	3538	3873	4040	4060	4050	4200	4250	4300	2639	3279	3196
Africa	84174	87775	91040	96931	100175	103022	105807	108388	111351	118878	114333	116409
Global	364349	404725	420577	424069	432286	445837	475191	471669	474919	479365	486660	493015

Source: FAO, (2015)

The leather sector in Kenya was incepted in 1905 with the purpose of nurturing good quality leather production within the British Protectorate. It was then one of the most active functions run by non-veterinarians and the only such services to operate under the then veterinary field

services. The principle objective of this service was to undertake raw hides and skins improvement to cater for an export scheme to service the British industry (Mwinyihija, 2012).

The first such supply occurred in 1909 fetching £3000 worth of revenue for the protectorate. The industry was to continue this way until when major legal frameworks were developed in 1947 and 1987 legislative reviews. Currently the legal reference in the sub-sector remains with CAP 359 (Hides, Skins and Leather trade Act) of Kenya Laws. However the approach in the past remained focused in the public domain rather than draw partnership synergies with the private sector. Unfortunately for the private sector in the 1970's and 1980's the export compensatory scheme operated by the Kenyan Government provided a 'pseudo' platform for the growth of the leather sector. The operational registered tanneries by then were 17 and increased to 19 by 1990, with a capital investment worth Sh3.8 billion directly employed 4,000 people. The tanneries were in Nairobi, Thika, Nakuru, Kitale, Sagana and Samburu (Henry, 2009). This changed after the abolition of the government's 'export compensation' scheme and market liberalization, which involved cutting trade tariffs on imported leather and footwear, provoking a surge in cheap imports. Half the tanneries went out of business and thousands of jobs were lost. This scenario warranted the public sector, through various national policies, such as Economic Recovery Strategy for wealth and employment creation (ERS), Strategy for Revitalizing Agriculture (SRA) and ultimately vision 2030 to redefine and strategize on the leather sector's economic growth (Henry, 2009).

2.2 **Processing of Hides and Skins in Kenya**

The sector's contribution to Kenya's economy currently stands at Kshs.10.6 billion and creates employment to over 22,540 people directly and indirectly (Mwinyihija, 2012). The said

employment is created through the 14 existing tanneries, a number expected to increase to 21 after the completion of 8 mini leather processing units under construction in various regions of the country, Buna mini leather processing unit being one of those. There are also over 85 leather goods/cottage units in Kenya that also supplement employment (Jayne *et al.,* 2014).

The leather industry in Kenya is mainly dependent on the large livestock resource base with an estimated population of: 17.5 million cattle, 27.7 million goats, 17.1 million sheep and 3.0 million camels. The industry also derives its raw materials from emerging livestock such as fish (Nile perch), farm ostriches and farm crocodiles.The hides and skins trade has gone through phases; witnessing positive impact on the sector. The sector transformed from a purely raw material source to relatively modern industry adopting the changing technology and market trends. The transformation saw the country act as a tanning hub for the region through procurement of hides and skins and supply of leather in both local and regional markets. In addition, it experienced exports of semi- processed leather (wet-blue) to the international markets (Jayne *et al.,* 2014).

Currently, tanneries in Kenya have installed capacities standing at 60 per cent for wet-blue, crust leather at 25 per cent and finished leather taking 15 per cent. The leather goods and footwear subsectors in Kenya have exhibited a lot of potential for growth with an increase of leather goods units to 85. There are 25 enterprises engaged in formal footwear and leather goods manufacturing. This has a utilization capacity of more than 70 per cent. Apart from the formal sector, there are hundreds of informal footwear manufacturing units/ small and medium

enterprises (SMEs) which undertook manufacturing of 55-60 percent of the local footwear production (Mark and Felista, 2010).

By 2004/05, 80 per cent of hides and skins were being exported in raw form (UNIDO, 2010). The reliance on a primary, unprocessed commodity provides relatively little income in the value chain. Only eight per cent of the value of the international leather trade is accounted for by raw hides and skins, compared to 86 per cent for leather, processing to wet blue stage adds 80 per cent to the value of raw hides and skins, moving to crust adds 200 per cent and to finished leather 400 per cent (UNIDO, 2010).

A major change came in 2004/05 when the government, responding to industry stakeholders, especially the tanning sub-sector, began to re-look at how to increase value addition in the leather sector (Mark and Felista, 2010). In its 2006 Budget Speech, the government raised the tax on the export of raw hides and skins to 20 per cent and the following June doubled it to 40 per cent, with the aim of encouraging the leather processing industry (Mark and Felista, 2010).

The policy has been strikingly successful, at least according to the available figures. In the year after introducing the 40 per cent duty, Kenya's leather exports rose 54 per cent (Mark and Felista, 2010). Now, nearly 98 per cent of skins produced in the country and 96 per cent of hides are semi-processed to wet blue or finished leather compared to 56 per cent in 2004 (Mark and Felista, 2010). Production of raw hides and skins declined by a factor of six from 2003 to 2007 while finished leather production increased more than four-fold: in 2007, Kenya produced 20,000 metric tons of leather compared to around 5,000 in 2003 and 10,000 in 2005.Government

figures show that earnings from the leather industry have risen from Sh3.15 billion in 2005 to Sh4.02 billion in 2008 – a rise of Sh870 million, or 21 per cent. One source of income is increased company tax payments. The number of tanneries has risen from nine in 2005 to 13 in 2009, with operating capacity improving from around 30 per cent in 2003/04 to 70 per cent in 2007/08 (COMESA/LLPI, 2013).

2.1 **Production of Hides and Skins**

2.1.1 **Livestock population and production of hides and skins**

The potential of hides and skins production among the pastoral communities in Wajir County is immense, judging from the livestock population in the County as shown in table 2.2.

Table 2.2: Livestock Population comparison, national and for Wajir County

Species	**Numbers National**	**Numbers Wajir**
Cattle	13,000,000	794,552
Sheep	9,000,000	1,406,883
Goats	10,000,000	1,866,226
Camels	900,000	533,651

Source: KNBS, (2009)

As shown in table 2.3, Wajir County also has great potential to produce hides and skin evidenced by the comparison between the annual production for Wajir County and the national production quantities.

Table 2.3: Annual hides and skins production comparison, national and for Wajir County

Species	Numbers Nationally	Numbers Wajir County
Cattle	2,600,000	2,587
Sheep	2,400,000	56,892
Goats	3,500,000	70,417
Camels	60,000	7,849

Source: KNBS, (2009)

Extensive system of livestock production is practiced due to the nomadic and pastoral way of life of the communities of Wajir County. There are vast tracks of land with poor quality soils and climatic conditions that favor this way of life (Leff, 2009).

Kenya's hides, skins and leather industry contribute an estimated 4 per cent to agricultural gross domestic product (GDP) and 1.5 per cent of total GDP (Mwinyihija, 2011). In 2009 the country produced 3.5 million goat skins, 2.4 million sheep skins, 2.6 million cattle hides, and 65,000 camel hides, with an estimated value of USD 20 million (Mwinyihija, 2010). In the local market the dealers were estimated to earn about KES 1.8 billion annually, while in the export scene the country earns approximately KES 4 billion from the exports of hides, skins, leather and leather goods (Anton, 2016).

2.1.2 **Animal husbandry practices for production for quality hides and skins**

These would include breed selection for large sized animals, pasture and rangeland management to ensure quality forages for livestock and avoid thorny pastures which predispose animals to damage of hides and skins. Avoiding indiscriminate branding and marking of animals would also

ensure production of good quality hides and skins. Provision of adequate and quality feed and supplement to animals would eliminate emaciation and ensure attaining of maximum body size which would lead to quality large sizes of hides and skins. Provision of veterinary services promptly and judiciously would eliminate skin and wasting diseases which lead to production of poor quality hides and skins (Jabbar *et al.*, 2002).

2.1.3 **Characteristics and methods of production for good quality hides and skins**

Good quality hides and skins are large in size and from large sized animals in good health condition. Flaying is done skillfully with minimal defects in large animals and preferentially tube flaying in small stock. Wet salting method of curing is practiced to preserve them when they cannot be availed to tanneries while green. Grading of hides and skins is practiced whereby there are four grades (I-IV). Grading is determined by the extent of defects regardless of whether they occurred pre-slaughter, peri-slaughter or post-slaughter. Grade I is the best while IV is for the most defective. Good quality hides and skins fall in either grade I or II (Jabbar *et al.*, 2002).

2.1.4 **Characteristics and methods of production of poor quality hides and skins**

Hides and skins are usually small in relation to the respective species, and from emaciated animals in poor health condition. Flaying is done without skill, with many defects albeit from pre, peri or post-slaughter activities. Sun dried or even ground dried and poor quality hides and skins are usually in grades III and IV (Sammy, 2012).

2.1.5 **Slaughtering and flaying techniques for production of quality hides and skins**

Good slaughter techniques ensure proper restraint of animals before and during slaughter to limit struggling and bruising during the slaughter process. It also maximizes on hides and skins around the neck area. It also ensures proper bleeding which also leads to better quality of hides and skins. Good flaying techniques involve use of proper flaying tools e.g. flaying knives which minimize on defects arising from use of crude tools and kitchen knives. It also entails making of straight and accurate ripping lines resulting to good pattern (Elliot, 1985). Good flaying techniques also minimize use of tools and encourage tube flaying to minimize on defects. Hides and skins produced in the pastoral areas is of low quality due to poor slaughter methods, poor flaying methods and poor curing methods among other short comings in the value chain. According to (Foxwell, 1999) pastoralists use sun drying methods of curing hides and skins leading to poor quality leather.

2.1.6 **Preservation (Curing) of hides and skins**

There are various curing methods including wet salting, air drying, sun drying and ground drying (Covington, 2009). Wet salting consists of making piles or stacks of hides and skins with layers of salt in between them. It is important to place the pieces with the flesh side up so that salt can dissolve and lay on the surface before diffusing in. It is the most reliable way of curing the hides to ensure high quality (Wayua and Kagunyu, 2008). If good quality wet salted hides and skins are produced, prices of the raw stock would go up, markets channels would increase and adequate revenue could be realized by the primary producers and traders (Kite and Thomson, 2006).

Air drying is when hides and skins are dried using frames or suspended in a structure, it is the most common and effective method of preservation by drying. Like all procedures applied to hides and skins it should be done in the shade or in a *banda*, and is commonly referred to as "shade drying". Sun drying is perhaps the oldest and certainly the crudest method of preservation consisting of placing the hides or skins on the ground flesh side up. After a few days in direct sunlight the hide or skin is removed and stored. Despite being practiced for such a long time the procedure is widely misunderstood (Leach, 1995). Sun dried hides and skins take more time to tan and also use more chemicals at the tanneries as compared to wet salted hides and skins (Covington, 2009).Ground drying has since been banned although still widely practiced in Wajir County, as observed by (Kagunyu *et al.*,2011). Pastoralists mainly use ground drying and suspension drying to cure hides and skins, which result in inferior quality hides and skins. Table 2.4 shows various advantages and disadvantages of using various techniques of hides and skins curing.

Table 2.4: Various hides and skins curing techniques, their advantages and disadvantages

Technique	Advantages	Disadvantages
Sun Drying	Hides and skins require less time to dry	Requires a lot of time to soak back Requires use of more quantities of chemicals Results in production of poor quality leather Causes leather defects e.g. "case hardening" and putrefaction
Wet Salting	Uses less time to soak back Uses less tanning chemicals Results in production of high quality leather	Requires training
Air Drying	Easy to practice	Requires a lot of time to soak back Requires use of more quantities of chemicals Results in production of poor quality leather

Source: Covington, (2009).

2.2 **Opportunities to Improve Performance of Hides and Skins Subsector**

The hides, skins and leather industry in Kenya is one of the key agricultural sub-sectors with a high potential for commodity development that addresses pertinent issues of socio-economic importance and positively impacts on rural development, creation of wealth and employment (Mwinyihija, 2011). Research conducted in pastoral areas of northern Kenya has shown that value addition of hides and skins has potential of increasing incomes in the pastoral areas (Wayua and Kagunyu, 2008; Kagunyu *et al.,* 2011). Opportunities hence lie in areas such as;

- Promoting good animal husbandry practices including breeding and animal health activities to introduce good and healthy breeds (Kite and Thomson, 2006).
- Harnessing of good practices in livestock keeping especially in the ASALs which make up to 80 per cent of Kenya, as they are the major source of beef because despite the large livestock population in pastoral areas, value addition for hides and skins is relatively un-developed (Mwinyihija, 2010; NESC, 2010; Mwinyihija, 2011).
- Capacity building of slaughter-men and flayers to enhance production of quality hides and skins (Kite and Thomson, 2006).
- Grading of hides and skins by qualified hides and skins inspectors (Jabbar *et al.,* 2002).
- Capacity building on best practices of curing of hides and skins, especially promotion of the wet salting technique. Most pastoralists preserve hides and skins using sun drying and suspension drying, which lead to inferior quality products (Kagunyu *et al.,* 2011).
- Impeding export of raw and semi-processed hides and skins; - currently 80 per cent of hides and skins are exported at wet blue stage (semi-processed) while the rest are exported in their raw form (Jabbar *et al.,* 2002).

- Promote use of Kenyan leather; currently only 10 per cent of the hides and skins resource from Kenya is utilized in Kenya; 90 per cent is exported (Jabbar *et al.,* 2002).
- Promotion of value addition; value addition in agricultural commodities can be defined as improving the natural and conventional form, quality and appeal of a product subsequently increasing the consumer valuation beginning from farm level to marketing of finished products (Leach and Wilson, 2009).

The government's strategy to develop the hides, skins and leather industry comes from its blue print for industrial development by the year 2030, (Vision 2030), which promotes industrialization and value addition in key sectors (NESC, 2010).

These are factors contributing to production of low quality hides and skins. They include;

2.2.1 **Un-collected hides and skins**

Many hides and skins remain uncollected, which is estimated at 14 per cent for hides, 34 per cent for sheep skins and 29 per cent for goat skins (Muthee, 2008). Income and employment opportunities are lost and that might be associated with uncollected hides and skins.

2.2.2 **Inadequate animal husbandry practices and poor skills**

As a result of the by-product status, not enough attention is paid to maintaining the quality of hides and skins. Hides and skins are affected by pre-slaughter defects (breed selection, pasture and range land management, proper feeding and supplementation and humane handling of animals) accumulated during the life of the animal, peri-slaughter defects (lairage management),

during slaughter (minimize struggle by humane slaughter, proper bleeding, maximizing of skin in the neck region), and post-slaughter defects (flaying skills and curing methods) during handling, preservation and storage (Mwinyihija, 2010; 2011).

2.2.3 **Inadequate numbers of slaughterhouses and slabs**

The number of slaughterhouses is limited. Thus, the majority of cattle, sheep and goat slaughter are carried out in the backyard, resulting in poor quality raw hides and skins (Kagunyu *et al.*, 2011).

2.2.4 **Low prices of hides and skins**

The current low prices of hides and skins are a disincentive for proper handling and curing. The primary producer in the village, the small farmer, receives such a poor return, as compared with the final price, which does not give those incentives to improve the quality of livestock or their hides/skins (Kagunyu *et al.*, 2011).

2.2.5 **Climatic factors**

Wajir County being a pastoral area is an arid and semi-arid region with high ambient temperatures (>25°C) and low relative humidity (<30 per cent) conditions (KMD, 2010). It's very much prone to droughts leading to livestock deaths. These conditions also accelerate spoilage of hides and skins unless adequate preservation measures are undertaken promptly. Parts of Wajir County are prone to flooding during the rains which leads to mass death of livestock.

2.2.6 **Poor infrastructure, remoteness and lack of market information;**

Poor infrastructure increases transport and other transaction costs, and is a major limitation to the marketing of hides and skins. These characteristics magnify the effects of inadequate information-sharing, from which markets in pastoral areas are suffering (Wayua and Kagunyu, 2008).

2.2.7 **Unfair competition from unlicensed dealers**

There are very many unlicensed dealers who do not pay for the license / permits and market service fees, and so can set the market price at any value. This demoralizes the licensed merchants (Kagunyu *et al.,* 2011).

2.2.8 **Lack of capital**

Finance for initial capital outlay, expansion and working capital remain a major constraint. Setting up a modern slaughterhouse or a tannery is an expensive undertaking. There are very few financial institutions or banks that are willing to lend money to hides and skins traders as they do not have acceptable collateral; livestock is not accepted as a security for loans and the land tenure in pastoral areas is such that there are no individual title deeds (Wayua and Kagunyu, 2008).

2.2.9 **Insecurity in livestock producing areas**

This situation, which has been endemic in pastoral areas, has its roots in a combination of factors including conflicts over natural resources (pasture, water and land), livestock rustling and

intertribal and inter-clan clashes. The situation is exacerbated by instability in bordering countries-Somalia, Ethiopia and Sudan (Kagunyu *et al.,* 2007).

2.3 **Socio – cultural factors that affect collection of hides and skins**

According to (Merriam-Webster's Collegiate Dictionary 2012), socio-cultural factors are customs, lifestyles and values that characterize a society. Some examples are religion, attitudes, economic status, class, language, politics and law. In the context of this study, both cultural and religious factors were considered as factors influencing the quantities of hides and skins collected, as well as their quality (Wayua and Kagunyu, 2008).

2.3.1 **Cultural factors**

Culture is the sum of symbols, meanings, habits, values, institutions, behaviors and social artifacts which characterize a distinctive and specific human population group (Barro and Sala-i-Martin, 1996). Culture can be defined in a sufficiently narrow way that makes it easier to identify a causal link from culture to economic outcomes. As such, another basic definition can be that of (Guiso *et al.,* 2006): those customary beliefs and values that ethnic, religious and social groups transmit fairly unchanged from generation to generation. This definition provides an approach to identify a causal effect from culture to economic outcomes and focuses on those dimensions of culture that can have an impact on the economic outcomes, beliefs (i.e. priors) and values (i.e. preferences).

According to (Birdsall *et al.,* 2001) the decision of saving money is a culture's main mechanism to influence the economic preferences, through the relation between religion and the preference

for savings (indicator measured as the percentage of population that educate their children to make savings). His paper showed that religious people are more likely to educate their children to make economy than the non-Christians. Furthermore, the author suggested that sharing a specific religion can have an influence on a country's economic performances.

According to (Guo, 2006), culture can be studied through three main elements – ethnicity, language and religion. This can be explained by the fact that the ethnicity provides a genetic basis in which socioeconomic behaviors between groups of people can easily be differentiated, the language is an effective tool of communication and religion can provide insights into the characteristics of culture. In the context of this study, cultural festivities play a great part towards a sudden increase in the quantities of hides and skins collected, and many which are left un-collected that do not access the market.

2.3.2 **Religion**

The Pastoral communities have strong ties with indigenous and religious institutions (Kassa and Temesgen 2011). According to (Long and Swortzel 2007), the mission of extension services is to provide research based information, educational programs and technology on farmers' needs and enabling them to make informed decisions about their economic, social and cultural well-being.

2.4 **Factors of Production Affecting Collection of Hides and Skins**

This study will consider the four factors of production in the context of their effect on hides and skins trade; First is capital which as a tool of production refers to goods used to produce other goods and services and does not necessarily refer to money (Clow, 1993). Physical capital is the actual structure and equipment used to produce goods and services. Financial capital is the

ownership claims to a certain monetary amount or claim of capital (in case of stocks) and what the capital produces in future (Wessels, 2000). Second is labor which refers to human effort used to produce goods and services (Clow, 1993). Labor markets emerge because there is an imbalance between the ownership of various inputs of production. Various types of labor include family, casual, contractual and permanent. This may be manual or mechanized labor (Leach and Wilson, 2009).Third is land which refers to natural resources (gifts of nature) before they are changed by human effort (Clow, 1993). Fourth is entrepreneurship which is a combination of other factors of production to create goods and services, or the human resources that assume risk of organizing other resources to produce goods and services with innovation being a key factor towards production of better goods and services. Hence, an entrepreneur is an individual who recognizes opportunities (wants or problems) and uses resources to implement innovative ideas for new thoughtfully planned ventures (Clow, 1993).

CHAPTER THREE

MATERIALS AND METHODS

3.1. Study area

This study was conducted in Wajir County which is in North Eastern Kenya, one of the counties created under the Kenya Constitution 2010.The county is of great significance in terms of hides and skins production. Pastoralism is the mainstay of this County with livestock rearing as the main economic activity. The county was picked because there is a tannery being constructed in Buna (i.e. Buna leather mini processing unit) whose operation and sustainability depends on supply of hides and skins from the pastoral communities of Wajir County, and also from the neighboring counties of Marsabit and Mandera. Wajir is also one of the counties with the largest livestock populations and meat is the staple food for the communities in the County. There is therefore frequent slaughter of livestock especially sheep and goats', leading to production of large quantities of hides and skins. There are limited slaughter facilities in the county meaning that most people slaughter at home while their awareness about the hides and skins resource is unknown.

The county is located between coordinates 01°45′00″N 40°03′00″E/ 1.75000°N. It covers an area of 56,685.8 sq km and has a mean annual temperature of 28 °C with rainfall amounts ranging between 250mm and 700mm per annum in different parts of the county (KNBS, 2013). Figure 3.1 shows a map of the county, as well as its location within Kenya.

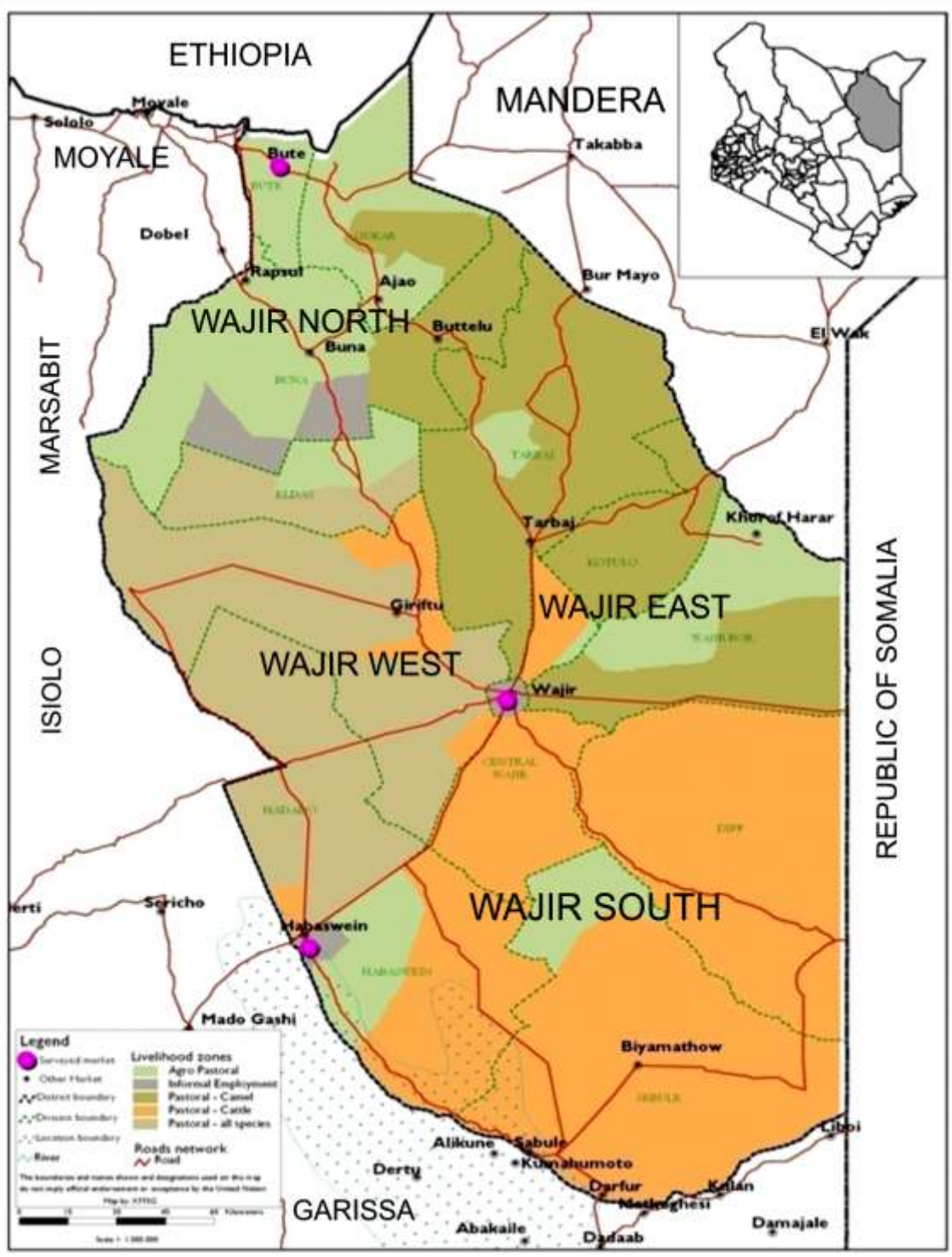


Figure 3.1: Map of Wajir County

Source: GOK, KFSSG 2011, Wajir District Rain Assessment Report, 2011

Almost all the pastoralists in Wajir County are Muslims. According to KNBS (2009), Kenya has a population of about 4,305,016 Muslims; of this 655,034 are from Wajir County accounting for about 15 per cent of Muslims in the entire country, and about 97 per cent in Wajir County. In the (FAO, 2003) report on understanding the indigenous knowledge and information systems of pastoralists in Eritrea, Islam is an almost exclusively dominant religion among pastoralists. Kassa and Temesgen (2011) stated that the pastoral communities have strong ties with indigenous and religious institutions.

Religious festivities are marked by home slaughter of especially small stock among the pastoral communities in Wajir County. This practice leads to an upsurge in the quantities of hides and skins received by collectors and traders, which makes them significant causes of increased loss of hides and skins that remain uncollected.

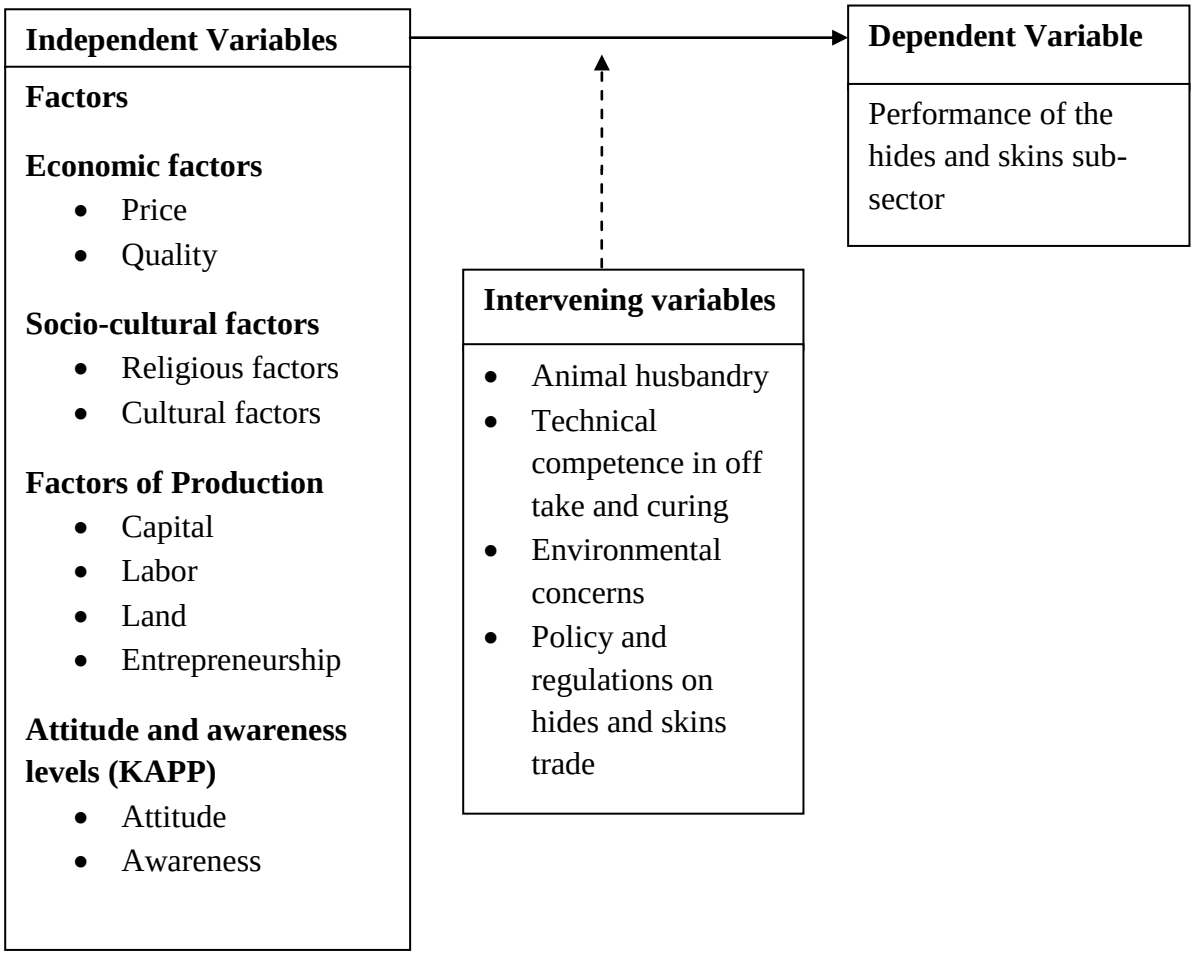
The administrative headquarters of the county is Wajir Town. Wajir is located in an arid area prone to drought. The soil types range from sandy soils, red volcanic soils and loam soils especially in the larger Wajir North. Livestock keeping (i.e. pastoralism) is the main economic activity in the county; this is the reason why the county was selected for this study. Some of the pastoralists are also slowly adopting bee keeping (KNBS, 2013).

3.2 Conceptual Framework

The conceptual framework of the study had two classes of variables, independent variables broken down into sub-variables including; economic factors, socio – cultural factors, production factors, attitude and awareness levels while the dependent variable was the performance of hides

and skins sub-sector. The intervening variables that could exist between the independent variables and un-collection of hides and skins include; animal husbandry, technical competence in off-take and curing, environmental concerns and policy on hides and skins trade regulations as shown in table 3.1.

Table 3.1: Conceptual Frame Work



The performance of the hides and skins subsector in Wajir County was assessed by comparison on how the prices of hides and skins had varied from the time when previous surveys had been

conducted. This was to assess whether prices had either improved or worsened while considering species, technique used in curing and whether there were any defects on the hides and skins.

3.3 Methods and procedures

This section contains study design, sample size determination, data sources and collection methods and data analysis techniques.

3.3.1 Study design

A cross sectional study design was adopted where by all the active flayers and traders all over the County during the period of study were interviewed. Primary data was collected from the selected respondents using semi-structured questionnaires. In addition, key informants who included the CDVS, NDMA and KWS were interviewed for more information including disease occurrence reports, drought reports and predation reports.

3.3.2 Sampling procedure and sample size determination

A homogenous purposeful selection of all the active flayers and traders in Wajir County was done with the help of Community Disease Reporters (CDRs) who served as the link between the researcher and the community. Key informants including County Director of Veterinary Services, County Leather Development Officer and the Hides and Skins inspectors spread out in various sub-counties assisted to develop lists of centers with active flayers and traders who then became our target respondents.

3.3.3 Sample size determination

All the active flayers and traders in the county were engaged for the study and they included ninety two (92) flayers and fourteen (14) traders, giving a total of 106 interviewees. Two sets of

questionnaires were developed for collecting information i.e. one for traders, another for flayers. Interviews were conducted for key informants.

3.3.4 Data Sources and Collection Methods

Target traders, flayer men and women were the source of primary data. The data was collected from the selected respondents using semi-structured questionnaires. Key informants also contributed information and they included Hides and Skins Inspectors (HSIs), County Leather Development Officer (CLDO), Kenya Wildlife Service (KWS), National Disaster Management Authority (NDMA) and County Director of Veterinary Services (CDVS), Wajir County. Data from the key informants was used for comparison with data obtained from hides and skins flayers and traders so as to enrich the information obtained. Information was also obtained from literature, direct observation, libraries and the internet.

3.3.5 *Bayes* theorem

According to (Harper, 1996) *Bayes* theorem describes how the conditional probability of each of a set of possible causes for a given observed outcome can be computed from the knowledge of the probability of each cause and the conditional probability of the outcomes of each cause. The population of hides and skins produced in Wajir County which does not reach the established marketing channels due to non-collection and/or poor quality will be estimated using the *Bayes*' Theorem of probability. This method can be put in formula terms as follows:

Given that a particular subsequent event S has actually occurred, then the probability that a given Possible prior event E occurred is:

$$P(E|S) = \frac{P(E) * P(S|E)}{P(S|\text{any prior event})}.$$

Since P(S|any prior event) is computed by multiplying the probability of every E by the conditional probability of S given E occurred, and then by adding the resulting product, P(S|any prior event) can be written as

$$\sum_{i=1}^{n}(P(E_i) \times P(S/E_i))$$

Therefore, $P\left(\frac{E}{S}\right) = \frac{P(E)\times P(\frac{S}{E})}{\sum_{i=1}^{n}(P(E_i)\times P\left(\frac{S}{E_i}\right))}$

3.3.6 Data needs

Quantitative information collected included quantities of hides and skins collected by flayers and traders, the costs of various hides and skins including cattle, camel, sheep and goats from the 92 flayers questionnaires and the 14 traders questionnaires. Also categories of quantities relative to the curing methods i.e. whether air dried, wet salted or damaged. Quantitative information for hides and skins lost from predation, diseases, mal-conditions and drought was obtained from key informant interviews. The quantities for non-collected hides and skins were calculated using *Bayes* theorem.

3.3.7 Data Sources

Table 3.2 indicated how data was obtained from key informants, hides and skins flayers and hides and skins traders.

Table 3.2: Data Sources

Data Source	Type of Data	Method of Data Collection
Key Informants	Expert opinion on quality of hides and skins collected in Wajir County Secondary data on quantity and quality of hides and skins collected in the county Expert opinion on the future of the hides and skins value chain in Wajir County	Key informant interviews
Hides and Skins Flayers	Quantities of hides and skins collected Value of Hides and Skins collected Curing techniques of hides and skins collected Amount of money lost from uncollected hides and skins Constraints of the hides and skins trade at the flayer level.	Flayers questionnaires
Hides and Skins Traders	Quantities of hides and skins collected Value of hides and skins collected Curing techniques of hides and skins collected Amount of money lost from non-collected hides and skins Constraints of the hides and skins trade at the trader level.	Traders questionnaires

3.3.8 Data analysis techniques

Statistical Package for the Social Sciences (SPSS) Version 22 was used for data entry and descriptive analyses. Data was described using graphs, charts and percentages. *Bayes* Theorem was used to calculate the quantity of un-collected hides and skins, while multiple regression method was used for hypothesis testing. All the tests were computed at 5% significance level.

CHAPTER FOUR

RESULTS

4.1 Demographic characteristics of the respondents

Table 4.1 shows the demographic characteristics of flayers and traders who were the respondents in this study. The characteristics include: age, gender, duration of hides and skins trade and highest level of education.

4.1.1 Gender of the respondents

Female respondents for flayers in the study comprised 10 per cent while the male respondents comprised 90 per cent, while the traders in the study comprised 100 per cent males.

In this community men participated in the slaughtering and flaying of livestock from all the species in the study. Out of the total number of flayers 90 per cent were men, the 10 per cent comprised of women who did most of the flaying for small stock. Sheep and goats are the most commonly slaughtered species, meaning that women did most of the flaying.

4.1.2 Traders experience in hides and skins trade

Of the fourteen traders interviewed, 29 per cent had traded in hides and skins for a period between 6-10 years, while another 29 per cent had been in the hides and skin business for a period between 11-15 years. Still, another 29 per cent had traded in hides and skins for a period between 16-20 years while 13 per cent had an experience of between 21-25 years.

4.1.3 Level of Education

The level of education attained by the respondents was expected to increase the level of awareness on the importance of producing quality hides and skins. It was also expected to promote an attitude towards increased production and income generation from more quantities of

quality hides and skins. The study indicated that 29.3 per cent of flayers had primary education, compared to 21.4 per cent of traders. Up to 4.3 per cent of flayers had secondary education, while no trader had secondary education. Only 2.2 per cent of the flayers had tertiary education while none of the traders had tertiary education. Most of the dealers in hides and skins had no formal education i.e. 59 per cent of flayers and 78.6 per cent of traders.

Table 4.1: Demographic characteristics of the respondents

Factor	Percentage of flayers (n = 92)	Percentage of traders (n = 14)
Age		
• **18-35**	23	0
• **36-45**	34	14
• **46-65**	42	86
• **≥ 66**	1	0
Gender		
• **Male**	90	100
• **Female**	10	0
Duration of hides and skins trade (years)		
• **0-5**	-	0
• **6-10**	-	29
• **11-15**	-	29
• **16-20**	-	29
• **21-25**	-	13
Highest Level of Education		
• **No formal education**	65	79
• **Primary**	30	21
• **Secondary**	2.5	0
• **Tertiary**	2.5	
Any training on hides and skins		
• **Yes**	12	33
• **No**	88	67

4.2 Factors influencing training of flayers and traders

A multiple regression (Table 4.2) was done to determine whether training being the dependent variable (a) was determined by age, gender and level of education. The questionnaire sought to investigate whether the respondent had received any training before with regard to flaying, curing, storage and marketing of hides and skins. The results showed that age of the flayers was not statistically significant to training on flaying, curing storage and marketing p value=0.161, (i.e. p >0.05), gender was also not statistically significant to training on flaying curing storage and marketing (p value = 0.196>0.05). The level of education (p value=0.003) was found significant in influencing training of the respondents.

Table 4.2: Regression on Age, Gender and Level of Education with Training on Flaying, Curing, Storage and Marketing

Coefficients [a]					
	Un standardized Coefficients		**Standardized Coefficients**	**T**	**Sig.**
	B	**Std. Error**	**Beta**		
(Constant)	1.367	.294		4.655	.000
Age of the flayers	-.102	.072	-.170	-1.415	.161
Gender	.211	.162	.135	1.304	.196
Level of education	.095	.031	.360	3.035	.003

Dependent Variable: Training on Flaying, Curing, Storage and Marketing

4.3 Factors affecting hides and skins trade

Factors affecting hides and skins trade were identified by the respondents to be mode of supply, quantities purchased and the prices at which the hides and skins were being sold. The mode of supply was how the hides and skins were actually availed at the traders' premises. This was done either by flayers or individual pastoralists. Quantities purchased was determined by either availability of hides and skins, quality of hides and skins availed and capital to purchase the hides and skins presented at the traders' premises. Multiple regression was done to identify the most important factor affecting hides and skins trade in Wajir County. Table 4.3 shows the results for the regression analysis, n = 106.

Table 4.3: Factors Affecting Hides and Skins Trade in Wajir County

Factor	**Yes (%ntage of respondents)**	**No (%ntage of respondents)**	**p – value**	**Rank**
Mode of supply			0.001	1
Flayers	81	19		
Traders	88	12		
Quantities purchased			0.002	3
Availability	96	4		
Quality	37	63		
Capital	93	7		
Hides and Skins prices			0.0012	2
Species of animal	80	20		
Curing technique	5	95		
Size, shape, pattern	4	96		
Extent of damage	2	98		
Weight of hide/skin	9	91		

4.4 Prices of hides and skins as reported by flayers and traders

There were different prices offered for different species, technique used for curing and whether the hides and skins were damaged or not. According to the respondents, 93 per cent of both flayers and traders agreed that prices were determined by size, shape/pattern and extent of damages. Substance and weight were not major determinants except in cattle hides that were sometimes sold by weight with only 7 per cent of the respondents reporting that they were important. The prices of hides and skins were determined by several parties including flayers/collectors; other hides and skins traders and tanners as all the respondents stated.

4.4.1 Flayers prices for hides and skins

Table 4.4: Prices of hides and skins by method of curing in Wajir County.

Table 4.4: Prices in Ksh. for various species' hides and skins

Species	Wet Salted	Air and Sun Dried	Damaged
Goat Skins	90	30-50	15
Sheep Skins	90	30-50	15
Cattle Hides	400-600	250-320	100
Camel Hides	1200-1500	800-1000	350-450

n = 92

4.4.2 Traders prices for hides and skins

Table 4.5: Prices of hides and skins by method of curing

Table 4.5: Prices in Ksh. for various species' hides and skins

Species	Wet Salted	Air and Sun Dried	Damaged
Goat Skins	100-120	70-90	25-40
Sheep Skins	100-120	70-90	25-40
Cattle Hides	650-800	350-450	100-200
Camel Hides	1600-1800	1250-1500	450-600

n=14

4.5 Curing methods applied to hides and skins

It was evident that air/sun drying was the most common method of curing while wet salting was less common. Flayers and traders also received green hides and skins which they cured using either air drying or wet salting.

4.5.1 Curing of goat skins

From the total number of goat skins presented, percentages were calculated depending with the number presented per method of curing. This is shown in figure 4.1.

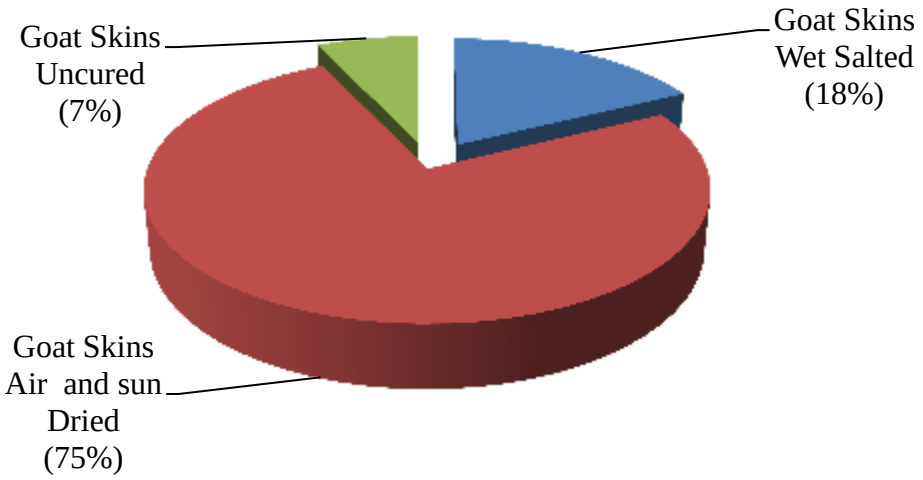


Figure 4.1: methods used for curing of goat skins

4.5.2 Curing of sheep skins

From the total number of sheep skins presented, percentages were calculated depending with the number presented per method of curing as shown in figure 4.2.

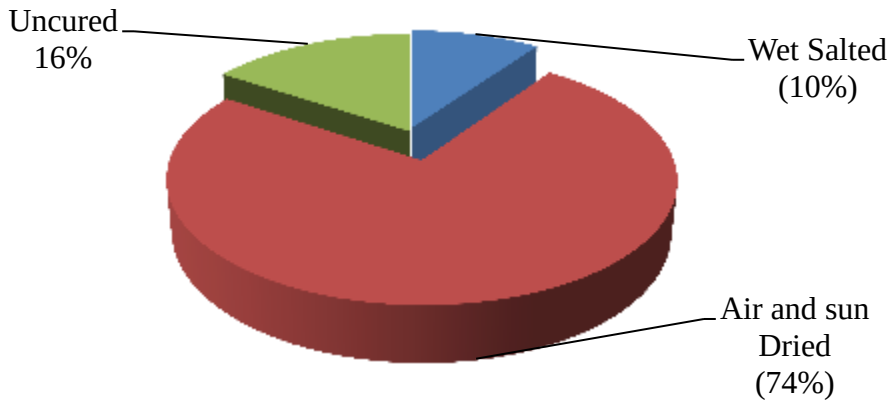


Figure 4.2: methods used for curing of sheep skins

4.5.3 Curing of cattle hides

From the total number of cattle hides presented, percentages were calculated depending with the number presented per method of curing as shown in figure 4.3.

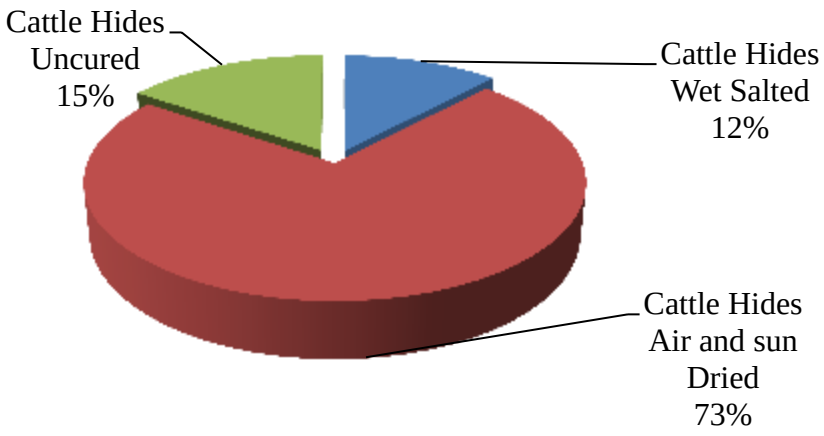


Figure 4.3: methods used for curing of cattle hides

4.5.4 Curing of camel hides

From the total number of camel hides presented, percentages were calculated depending with the number presented per method of curing as shown in figure 4.4.

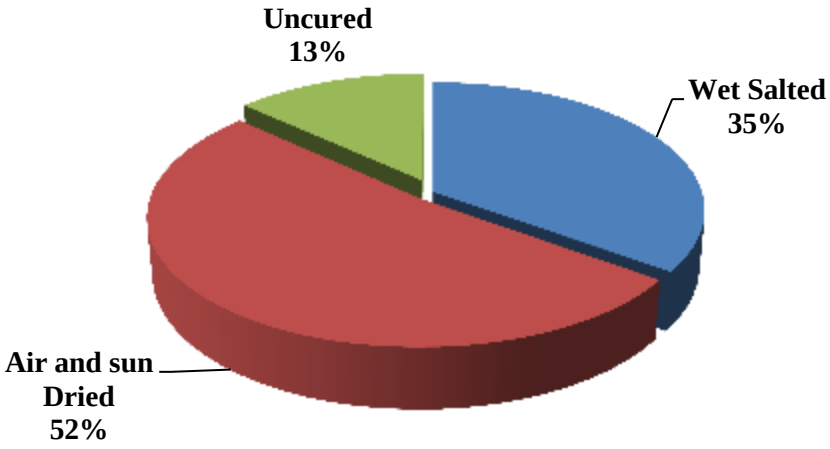


Figure 4.4: methods used for curing of camel hides

Plates 4.1 - 4.4 show a pictorial presentation of some of the curing methods practiced in Wajir County.

These were the some of the common methods of hides and skins preservation encountered in Wajir County. Sun drying and ground drying i.e. (Plates 4.1 and 4.2 and 4.4 respectively) preservation methods are practiced away from the major centers while wet salting i.e. (Plate 4.3) is practiced in major centers i.e. Wajir town and Habaswein.

Plate 4.1: Sun drying on a hut

Plate 4.2: Ground drying

Plate 4.3: Wet salting in Wajir town

Plate 4.4: Sun dried goat skins

4.6 Quantities of hides and skins collected in2014 by clusters

Hides and skins quantities collected and cured in 2014 were entered into four clusters including, Wajir town, Buna and Bute and Habaswein respectively. This was for the purpose of applying *Bayes* theorem later to calculate the uncollected hides and skins.

4.6.1 Goat skins

All the goat skins collected were grouped together in five different clusters so as to be able to apply the *Bayes* theorem formulae used to calculate the number of goat skins that were not collected.

Table 4.6: Quantities of goat skins collected Wajir County in 2014, by curing method.

Cluster	Wet salted	Air & sun dried	Uncured	Cluster total
Wajir Town	7890	11549	4611	24050
Buna	1623	1899	687	4209

Bute	1098	1759	702	3559
Habaswein	4849	7648	3268	15765
Abakore	2532	4547	1598	8677
	17992	**27402**	**10866**	**56260**

4.6.2 Sheep skins

All the sheep skins collected were grouped together in five different clusters so as to be able to apply the *Bayes* theorem formulae used to calculate the number of sheep skins that were not collected.

Table 4.7: Quantities of sheep skins collected in Wajir County in 2014 by curing method

Cluster	Wet salted	Air and sun dried	Uncured	Cluster total
Wajir Town	6292	11815	4663	22770
Buna	965	1728	812	3505
Bute	1324	1448	779	3551
Habaswein	5156	7228	3214	15598
Abakore	2198	3160	1443	6801
	15935	**25379**	**10911**	**52225**

4.6.3 Cattle hides

All the cattle hides collected were grouped together in five different clusters so as to be able to apply the *Bayes* theorem formulae used to calculate the number of cattle hides that were not collected.

Table 4.8: Quantities of cattle hides collected in Wajir County in 2014 by method of curing

Cluster	Wet salted	Air & sun dried	Uncured	Cluster total
Town	417	611	211	1239
Buna	58	98	29	185
Bute	61	83	33	177
Habaswein	254	321	79	654
Abakore	136	113	83	332
	926	**1226**	**435**	**2587**

4.6.4 Camel hides

All the camel hides collected were grouped together in five different clusters so as to be able to apply the *Bayes* theorem formulae used to calculate the number of camel hides that were not collected.

Table 4.9: Quantities of camel hides collected in Wajir County in 2014 by method of curing

Cluster	Wet Salted	Air & sun dried	Uncured	Cluster Total
Town	1018	1683	517	3218
Buna	169	265	82	516
Bute	170	227	77	474
Habaswein	740	1093	393	2226
Abakore	396	592	139	1127
Total	**2493**	**3860**	**1208**	**7561**

4.7 Quantification of un-collected hides and skins and their economic implications

The quantity of un-collected hides and skins was calculated using *Bayes* theorem; the quantities were then applied to come up with the economic losses as per hides and skins prices that were prevailing in the year 2014.

Table 4.10: Total goat skins collected in Wajir County in 2014 by clusters by both flayers and traders

Cluster	Wet salted	Air & sun dried	Damaged	Cluster total
Wajir Town	7890	11549	4611	24050
Buna	1623	1899	687	4209
Bute	1098	1759	702	3559
Habaswein	4849	7648	3268	15765
Abakore	2532	4547	1598	8677
	17992	**27402**	**10866**	**56260**

n = 106

4.7.1 Quantity of un-collected hides and skins and their economic losses

Table 4.11: Economic loss from un-collected hides and skins in Wajir County in 2014

Clusters									**Grand Total**
	Goat Skins		**Sheep Skins**		**Cattle Hides**		**Camel Hides**		
	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	
Wajir town	10245	10438	9973	10064	582	607	1364	1403	
Buna	311	320	231	239	12	14	34	36	
Bute	222	229	238	245	11	13	29	31	
Habaswein	3910	4446	4648	4711	160	171	634	657	
Abakore	1323	1349	874	894	40	45	165	174	
Level totals	**16011**	**16782**	**15964**	**16153**	**805**	**850**	**2226**	**2301**	
Level mean	**16397**		**16059**		**828**		**2264**		
Mean price (Ksh.)	**49.00**		**49.00**		**300.00**		**883.00**		
Total cluster loss (Ksh.)	**803,453**		**786,891**		**248,400**		**1,999,112**		**3,837,856**

Key: LCL – Lower Cluster Level

UCL - Upper Cluster Level

4.7.2 Amount of tax lost from un-collected hides and skins

In 2014, Wajir County lost up to over Ksh.400000 in form of taxes from un-collected hides and skins. Considering that the County Government of Wajir charges Ksh.10 for each skin and Ksh.15 for each hide, Ksh.370940 was lost in form of cess. Considering that a truck usually carries a consignment of one thousand skins or five hundred hides, an additional up to Ksh.33000 was lost in permits in that, every truck is charged one hundred shillings for a hides and skins consignment.

Table 4.12: Tax loss from un-collected hides and skins in Wajir County in 2014

Clusters									**Totals**
	Goat Skins		**Sheep Skins**		**Cattle Hides**		**Camel Hides**		
	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	
Wajir town	10245	10438	9973	10064	582	607	1364	1403	
Buna	311	320	231	239	12	14	34	36	
Bute	222	229	238	245	11	13	29	31	
Habaswein	3910	4446	4648	4711	160	171	634	657	
Abakore	1323	1349	874	894	40	45	165	174	
Level totals	16011	16782	15964	16153	805	850	2226	2301	
Level mean	16397		16059		828		2264		
Tax Per Piece(Ksh)	10		10		15		15		
Total cluster cessloss (Ksh.)	163,970		160,590		12,420		33,960		370,940
Total loss in Permits (Ksh.)									33,000
GRAND TOTAL									403,940

4.8 Major defects observed in hides and skins and their economic implications

The major defects observed in order of importance were brand marks, bruises, poor pattern, dirtiness and cuts. Up to 89 per cent of all respondents said that brand marks were the most important. Less common were veininess and putrefaction which accounted for 11 per cent, while the proportion of fallen hides was insignificant. The importance of fallen hides was hence brought up by key informants who included staff from the office of the CDVS, especially those in the hides and skins department.

4.8.1 Economic loss from Branding

Pastoralists in Wajir County brand their livestock for identification between the different clans or even families that reside in the county. This process has great negative effects on the quality of the hides and skins as it leads to degrading (Table 4.13).

Table 4.13: Economic losses caused by branding in 2014 from flayers and traders

Species	Total Collected (2014)	Percentage Branded	Total Branded	Price without brand mark	Price with brand mark	Price difference	Loss from branding (Ksh)
Goat skins	56260	28%	15,753	49	25	24	378,067.20
Sheep skins	52225	3%	1306	49	25	24	31,335.00
Cattle Hides	2587	57%	1475	300	150	150	221,188.50
Camel Hides	7561	38%	2873	883	530	353	1,014,232.54
							1,644,823.

n = 106

Plates 4.5 and 4.6 illustrate how most of the animals in Wajir County are branded affecting the quality of hides and skins.

Plate 4.5: Branding in cattle

Plate 4.6: Branding in camels

4.8.2 Economic loss from fallen (Dead animals) hides and skins

Table 4.14: Economic loss from fallen hides and skins caused by the drought experienced in the period 2009-2011

Fallen Hides (Drought + Predation) for the period 2009-2011			
Species	**No. Lost**	**Av. Prices of H & S (2009-2011)**	**Total Loss in (Ksh)**
Goats	518131	20.00	10,362,620.00

Sheep	672827	20.00	13,456,540.00
Cattle	200172	300.00	60,051,600.00
Camels	161966	450.00	72,884,700.00
Grand total			**156,755,460.00**

4.9 Factors affecting quality of hides and skins

The factors highlighted by the respondents included training, tool used for flaying, structures used to store hides and skins and effectiveness in collection of hides and skins (Table 4.15).

Table 4.15: Perception of flayers on factors affecting quality of hides and skins

Factor	**Percentage of respondent**	
	Yes	**No**
• **Importance of training on flaying**	95	5
Tool used for flaying		
• **Flaying knife**	18.5	81.5
• **Other tools (kitchen knife)**	81.5	18.5
Structure used for storage		
• ***Bandas***	16.3	83.7
• **Conventional shops**	83.7	16.3
Effectiveness of hides and skins collection		
• **Effective**	82	18
• **Not Effective**	18	82

n = 92

Plate 4.7 shows a flaying knife which is the recommended tool for flaying to minimize hides and skins defects.

Plate 4.7: Flaying knife

4.9.1 Statistical analysis of factors affecting quality of hides and skins

Training on flaying curing, storage and marketing was the most important factor that affected the quality of hides and skins purchased. The coefficient for training on flaying, curing, storage and marketing (.767) is statistically significant (p-value = 0.000).

Table 4.16: Statistical analysis of factors affecting quality of hides and skins

Coefficients[a]					
	Unstandardized coefficients		**Standardized coefficients**	**T**	**p – value**
	B	Std. Error	Beta		
(constant)	.456	.535		.852	.396
Tool used for flaying	-.133	.080	-.107	-1.675	.098
Structure for hides and skins storage	.108	.080	.083	1.342	.183
Effective collection of all hides and skins generated by Pastoralists	-.036	.161	-.011	-.226	.822
Training on flaying, curing, storage and marketing	.767	.065	.771	11.872	.000

A. Dependent variable: Factors affecting Hides and Skins Quality

4.10 Religion and Cultural effects on hides and skins collection

The respondents were asked when they experienced greater effects in quantities of hides and skins collected between and during religious and cultural festivities. Their response was as shown in table 4.17.

Table 4.17: Response on collection of hides and skins by flayers and traders during religious and cultural festivals

Factor	Flayers (%) (n = 92)	Traders (%) (n=14)
Collection of hides and skins during religious festivals	84	64
Collection of hides and skins during cultural festivals	16	36
	100	**100**

n = 106

4.11 Production factors affecting hides and skins collection and quality

Among the five factors that affected production of hides and skins collection and quality investigated, capital was identified by the respondents as the most significant factor p = 0.025. The other factors including migration, labor, entrepreneurship and land were found not to be statistically significant.

Table 4.18: Responses by flayers and traders on factors affecting hides and skins collection and quality.

S. No	Factor	Percentage of respondents		
		Yes	No	p – value
1	**Migration**			0.288
	Highly	80	20	
	Moderately	18	82	
	Slightly	2	98	
2	**Capital**			0.025
	Highly	90	10	
	Moderately	10	90	
	Slightly	0	100	
3	**Labor**			0.40
	Highly	88	12	
	Moderately	10	92	
	Slightly	2	98	
4	**Entrepreneurship**			0.460
	Highly	80	20	
	Moderately	50	50	
	Slightly	30	70	
5	**Land**			0.767
	Highly	5	95	
	Moderately	5	95	
	Slightly	90	10	

According to regression analysis results the factor that affected hides and skins collection and quality the most was capital, with a p value = 0.025. The other factors did not affect the quality

and collection of hides and skins, including land p value = 0.767, migration p value = 0.288, entrepreneurship p value = 0.460 and labor p value = 0.40.

Table 4.19: Analysis of the effects of factors of production on hides and skins collection and quality.

Coefficients[a]					
	Unstandardized coefficients		**Standardized coefficients**	**T**	**p – value**
	B	**Std. Error**	**Beta**		
(constant)	1.572	.707		2.222	.029
Labor to flay and collect hides and skins – sufficient	-.312	.164	-.201	-1.903	.040
Effect of land on collection and quality	-.031	.103	-.032	-.297	.767
Effect of capital on collection and quality	.378	.492	.081	.768	.025
Effect of entrepreneurship on collection and quality	.079	.151	.057	.526	.460
Effects of migration	.114	.107	.115	1.069	.288

A. Dependent variable: Quality and collection of Hides and Skins

4.12 Information channels on hides and skins trade

Flayers and traders were interviewed on the channels they used to access information about hides and skins trade including how they came to be aware of its existence.

Most of the flayers relied on other flayers and hides and skins collectors for information on the dynamics of the hides and skins market i.e. 40% although 33% still relied on extension officers. Traders largely relied on extension officers for information on hides and skins market 37% although another large proportion of them still relied on other hides and skins traders i.e. 33% for information on the dynamics of the trade.

Table 4.20: Information channels of access in percentages

Source of Information	Flayers (n=92)	Traders (n=14)
Extension Officers	33	37
Hides and skins traders	26	33
Flayers and Collectors	40	18
Electronic media	1	12

n = 106

4.13 Knowledge, attitude, perceptions and practicesof flayers and traders regarding economic importance of hides and skins

Over 97 per cent of the total respondents agreed that hides and skins trade is economically important as presented in the figures 4.5 and 4.6.

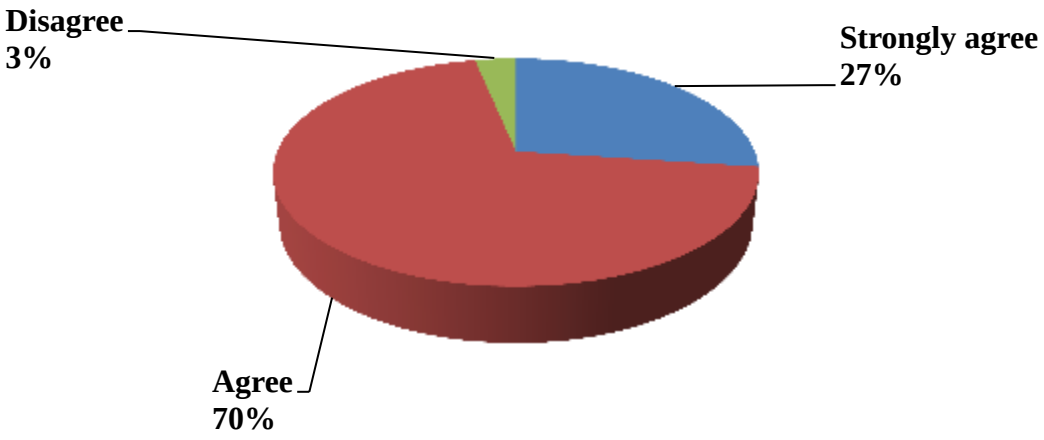


Figure 4.5: Hides and skins as a source of income for flayers

Up to 70 per cent of the flayers interviewed agreed that the trade was important as a source of income while 27 per cent strongly agreed. Only 3 per cent disagreed. All the traders agreed that hides and skins are an important source of income with 50 per cent strongly agreeing and another 50 per cent agreeing as shown in figure 4.6 i.e. Hides and skins as a source of income for flayers

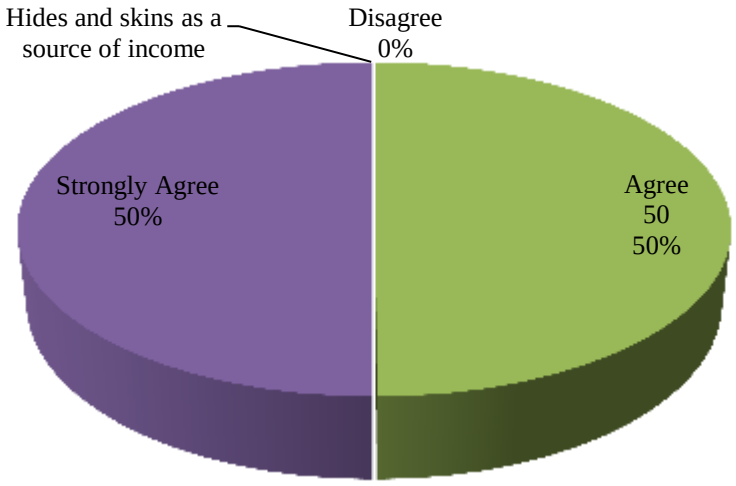


Figure 4.6: Hides and skins as a source of income for traders

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussion

The investigation found out that flayers were distributed across all the age brackets although this was the case, only 1 per cent was above 65 years of age. This might be due to the vigorous nature of the job which may not favour the elderly. As for traders, most i.e. 86 per cent were between 46 – 65 years. The youth were hence not found amongst hides and skins traders, which may be due to the fact that the trade requires a lot of money hence locking out the youth. According to the study by Ephraim *et al*; (2009), age is an important driver of change in livestock productivity. A study conducted in Nepal (FAO, 2010) found that there was need to provide an initial incentive to the unemployed youth to engage them in the hides and skins business. The study also suggested the possibility of involving small producers in the hides and skins business by provision of incentives.

Up to 90 per cent of the flayers were male while 10 per cent were female. There were no female traders in hides and skins. The 10 per cent female flayers were mostly tasked with the flaying of sheep and goats and various extremities of large animals, including cattle and camels. Numerous opportunities exist for processing of hides and skins into leather which can then be used to make various leather goods. This work, as observed by (Wayua and Kagunyu, 2008), can be done by women groups after proper training. While it offers higher returns in the entire chain, international markets need to be explored. Gender is an important parameter in livelihood diversification (WIBD, 2005; Freeman, Kaitibie, Moyo and Perry2008; Simtowe, 2009), which could apply to this sample population. According to a study in Ethiopia (USAID, 2013), there was an increase in the engagement of women into animal production value chains including

dairy, animal fattening and hides and skins. However, there remained several constraints including lack of control and full rights over use and sale of animals, limited value addition activities, access to credit and land ownership. The fact that it is women who were tasked with the flaying of small stock may have contributed to the numerous defects seen in sheep and goat skins because most of them have never been trained. Training according to the study was significant to production of quality hides and skins (p value = 0.000). Studies in Ethiopia by Ahmed (2016) found out that a differential price scheme set between categories of quality raw materials promoted production and supply of better quality hides and skins. The achievement of better quality was attained as a result of employment, training and assignment of improvement technicians for hides and skins potential provinces, preparation of hides and skins preservation manuals, establishment of market centres, monitoring the construction of slaughter houses and drafting hides and skins regulations.

There were no traders in the 0 – 5 years bracket indicating that no new traders were joining the hides and skins trade. This, according to the respondents, may have been caused by the poor returns that the traders had been getting from their business ventures. These poor returns hence discouraged new investment in the hides and skins subsector. A study conducted in Tanzania by Cecilia and Mbwana, (2015) indicated that the unstable market environment for hides and skins negatively affected trade in hides and skins. These included price fluctuation, high costs and increment in levy for exporting hides and skins.

Regarding the level of education among flayers and traders, up to 65 per cent of flayers did not have any formal education, while up to 79 per cent of traders did not have any formal education. Only 2.5 per cent of the flayers had secondary and tertiary education while 21 per cent of the traders had primary education. This was in agreement with studies by (Ngugi, 2013) where, only

4 per cent of Wajir County residents had a secondary level of education or above. This affects training and also the speed at which the quality of hides and skins from Wajir County can be improved.

The results showed that only 12% of the flayers and 33% of traders had gone through some level of training in hides and skins flaying and trading respectively. Having done a regression on the factors influencing training of flayers and traders, the results indicated that the age of the flayers was not statistically significant in relation to training on flaying, curing, storage and marketing ($p=0.161>0.05$). Gender was also not statistically significant in relation to training on flaying, curing, storage and marketing (p value = $0.196>0.05$). The level of education ($p=0.003$) was significant being less than 0.05. Level of education hence influenced training of the respondents, while age and gender did not influence training of the respondents. This may be explained partially by the fact that when trainings are being conducted for hides and skins traders, age and gender factors are usually not considered. Level of education is an` important factor in training as it determines the amount of content to be taught to the trainees.

The most important factor affecting hides and skins trade in Wajir County was mode of supply with a p value of 0.001. It showed how the hides and skins were availed to traders either from collectors, flayers or even from individual pastoralists. The second factor was the hides and skins prices with a p value of 0.0012 whereby the price of hides and skins was mostly determined by the species; this was, followed by the weight. The respondents also considered the curing technique used, size, shape and pattern and finally extent of damage in that order. The third factor was the quantities purchased with a p value of 0.002. It showed the capacity of each individual trader in handling of hides and skins; availability was most important. Most traders had the capital to purchase but the quantities delivered to their premises were not adequate. A

few traders said they did not have enough capital to purchase more than what they were purchasing at that time while only very few attributed the quantities they had to the quality delivered. This was not different from the observations by (Kagunyu *et al.,* 2011; Omiti 2004; Wayua and Kagunyu, 2008) that the traders in hides and skin do not usually consider quality.

With regard to prices of hides and skins, there was a slight improvement from what (Kagunyu *et al.*, 2011) observed when wet salted goat skins were sold at between Ksh. 50 and Ksh.70, sun dried at Ksh. 15-20 and green goat skins at Ksh. 30-40. There was only slight change in the cattle hides prices in comparison to what (Kagunyu *et al.,* 2011) observed, whereby wet salted cattle hides were sold for Ksh. 400-600, sun dried ones for Ksh. 200-400 and green cattle hides at Ksh. 150-300. Camel hides were the highest improved since the study by (Kagunyu *et al.,* 2011), when wet salted camel hides were sold for Ksh. 300-600, sun dried ones for Ksh. 50-150 and green camel hides at Ksh. 150-300. The study found out that the prices of hides and skins apart from being determined by the quality derived at production, also had external determinants including; the points of sale for traders mainly Isiolo and Nairobi markets, prices offered by tanners and also the export market.

Up to 75 per cent of goat skins were air dried; this was the most commonly used method of preserving goat skins. However, most pastoralists did not apply the method correctly as most still pegged the skins on the ground or dried them with the flesh side up, exposed to direct sunshine. Only 18 per cent of the goat skins produced in Wajir County were wet salted; the practice was only prominent in major centers like Wajir town and Habaswein. This observation is in agreement with what (Kagunyu *et al.,* 2011) found out that most pastoralists preserve hides and

skins using sun drying and suspension drying, which lead to inferior quality products. There was a higher percentage of uncured sheep skins at 16 per cent, than that of goat skins. The higher quantities of uncured sheep skins contributed to more damages in sheep skins. This may have been due to the fact that curing of sheep skins is harder than curing of goat skins. According to (Mwinyihija 2010; 2011), he observed that hides and skins are affected by pre-slaughter defects accumulated during the life of the animal; peri-slaughter defects during slaughter, and post-slaughter defects during handling, preservation and storage. These poorly cured hides and skins fetch hides and skins dealers very low returns on their trade.

Slaughtering of cattle in Wajir County is not a common practice and happens mainly in Wajir town and Habaswein. In other small centers and villages, it may happen during festivities for families without camels. Up to 73 per cent of cattle hides were air dried with only 12 per cent being wet salted. The result is poor quality hides and skins leading to poor quality leather. The situation is exacerbated by the fact that cattle are slaughtered in poorly constructed structures, while some are slaughtered on the ground using rudimentary tools as observed by (Eric *et al.*, 2015). This leads to lots of bruises due to dragging of the carcasses on the ground.

Up to 35 per cent of camel hides were wet salted. This may be explained by the fact that most camels recorded were from Wajir town slaughterhouse, with most traders in Wajir town practicing wet salting at low scale. The greater percentage though (up to 52 per cent) were air dried while 13 per cent were left uncured. For camel hides, poor flaying is also due to the inability of all Government abattoirs in Kenya to hang camel carcasses for skinning. Pre-, peri-

and post-slaughter defects account for 40 per cent, 20 per cent and 40 per cent, respectively, of the defects in hides and skins (Muthee 2008; NESC 2010).

Having used *Bayes* theorem to calculate the quantities of uncollected hides and skins in Wajir County, the total economic loss from non-collection and lost taxes amounted to over four (4) million Kenya shillings every year. This money would have been used to improve livelihoods. Furthermore, if value addition was applied, an even better income would have been realized. This is in conformity with observations by (Wayua and Kagunyu, 2008 and Kagunyu *et al.*, 2011) who showed that value addition of hides and skins has potential of increasing incomes in the pastoral areas of northern Kenya.

The major defects observed in hides and skins in order of importance were brand marks, bruises, poor pattern, dirtiness and cuts. Up to 89 per cent of all respondents indicated that brand marks were the most important. Less common were veininess and putrefaction which accounted for 11 per cent while fallen hides were insignificant. This is because fallen hides were never collected in the first place and whole carcasses were lost without any awareness that they could produce anything of economic value. This may be mainly attributed to both cultural and religious factors; the Somalis would not flay or open the carcasses of animals whose cause of death was not slaughter. The importance of fallen hides was hence highlighted by key informants who included staff from the office of the CDVS, especially those in the hides and skins department.

Pastoralists in Wajir County brand their livestock for identification. Different clans and even families have different identification brand marks for their livestock. This process has great negative effects on the quality of the hides and skins as it leads to degrading of the hides and

skins. Branding as a method of identification led to loss of about 1.64 million Ksh. for Wajir County in the year 2014.A study was conducted in Ethiopia by (Tesfay *et al.,* 2015) to identify defect types and to determine their prevalence in pickled sheep and wet blue goat skins and wet blue hides. Each selected skin or hide was examined for defects in natural light and the defects were graded according to established quality criteria in Ethiopian standard manuals. Major defects were captured by digital photography. The major pre-slaughter defects included scratches (64.2%), cockle (32.8%), wounds or scars (12.6%), lesions from pox or lumpy skin disease (6.1%), poor substance (5%), branding marks (2.3%) and tick bites (1.5%). The presence of grain scratches in wet blue hides (76.3%) was significantly higher than in pickled sheep (67.2%) and wet blue goat (59.1%) skins.

In an effort to assess the economic loss from fallen (dead animals) hides and skins the figures used were obtained from livestock mortality reports from the Ministry of Livestock Development from 2009 to 2011, drought reports from the NDMA in Wajir and livestock predation reports from KWS in Wajir during the same period. The prices of hides and skins during the period 2009-2011 were obtained from the observations made by (Kagunyu *et al.,* 2011) on factors affecting marketing of hides and skins in pastoral communities of northern Kenya as shown in Table 4.14. Up to Ksh. 156.7 million was lost from fallen hides in the period 2009 to 2011. These findings were paradoxical as many respondents from the questionnaires thought that losses from fallen hides were insignificant. This could have been due to the fact that neither religion nor culture allows the Somalis to open carcasses whose death was not from slaughter; it is indeed considered *haram*. They hence can't flay to obtain hides and skins from these carcasses. Whole carcasses are left to be eaten by predators or in a few instances buried. Members of this pastoral

community therefore might have never thought that an economic value could be attached to losses such as these.

The factors affecting the quality of hides and skins in Wajir County that were investigated in this study included tools for flaying, structures used for storage and effectiveness of hides and skins collection. The findings of this study indicated that 95 per cent of the respondents thought training was important and two major structures were used for hides and skins storage in Wajir County. Up to 16.3 per cent of the flayers used *bandas*, while 83.7 per cent kept their hides and skins on floors in conventional shops. This finding was in agreement with the observation by (Elliot, 1985) on mode of storage of hides and skins in the tropical and sub-tropical countries. This author observed that hides and skins produced in the tropical and sub-tropical developing countries are particularly liable to damage by insects, mold growths or by bacterial attacks. Quality of hides and skins is very important in determining the returns that such hides and skins will fetch in the market. As (Jabbar *et al.*, 2002) had observed that generally, trade in hides and skins in Africa is hampered by amongst others the poor image of the sector in overseas markets and lack of information flow when approached from the market side. The factors highlighted by the respondents included training, tools used for flaying, structures used to store hides and skins and effectiveness in collection of hides and skins.

Regarding flaying tools it was observed that 18.5 per cent of the respondents used flaying knives while 81.5 per cent used kitchen knives. On statistical analysis of these findings the results indicated that training on flaying, curing, storage and marketing was the most important factor that affected the quality of hides and skins purchased. The coefficient for training on flaying, curing, storage and marketing (.767) is statistically significant (p-value = 0.000).As observed by

(Wayua and Kagunyu, 2008), areas that need urgent attention include promoting optimum local utilization of hides and skins, improvements in recovery and quality through training in handling, flaying, preservation, storage and quality control for all the actors in the value chain.

With regard to religious and cultural factors affecting collection of hides and skins, the respondents were asked when they encountered large quantities of hides and skins collected between and during religious and cultural festivities. All the respondents reported an increase in the quantities of hides and skins collected during religious festivals. The respondents indicated that they witnessed larger quantities of hides and skins during religious festivals than during cultural festivals (i.e. 84 per cent of flayers and 64 per cent of the traders). This is due to the mass slaughter of livestock during these festivities, a practice largely observed as a norm by the Somali community. There is also a show of philanthropy during these festivities whereby meat is distributed to the less fortunate and even strangers. This phenomenon had been noted by (Jabbar *et al.*, 2002) who observed an increase due to home slaughter during religious and cultural festivities.

Respondents were questioned on which factors that they thought most affected hides and skins collection and quality. According to regression analysis results the factor that affected hides and skins collection and quality the most was capital p value = 0.025. The other factors did not affect the quality and collection of hides and skins, including land p value = 0.767, migration p value = 0.288, entrepreneurship p value= 0.460 and labor p value = 0.40. This finding could be attributed to the fact that without capital one would basically not be able to gain entry into hides and skins trade.

Flayers and traders were interviewed on the channels they used to access information about hides and skins trade including how they came to be aware of its existence. The findings in this study indicated that flayers and traders accessed information from four different sources. Most flayers obtained information from other flayers and collectors i.e. 40 per cent, from extension officers 33 per cent, and from hides and skins traders 26 per cent. Traders obtained information from extension officers i.e. 37 per cent, from other traders 35 per cent, from flayers 18 per cent and from electronic media 12 per cent. Flayers being distributed all over the county including very remote areas had to rely on person to person contact for information whereas traders had access to electronic media. This was true as most traders were located in urban settings with access to better reception of both electronic media and mobile telephony.

According to studies by (Yazan *et al.*, 2012) access to information and extension services has positive and significant influence on the per capita daily income. Access to information would enhance both the quantity and the quality of hides and skins production.

In an attempt to assess the knowledge, attitude, perception and practice of flayers and traders on the economic importance of hides and skins, a question was asked to assess how much the traders and flayers valued their involvement in the hides and skins trade. They were asked whether they agreed, strongly agreed or disagreed that hides and skins trade was economically important. Over 97 per cent of the respondents agreed that the trade is economically important. Up to 70 per cent of the flayers interviewed agreed that the trade was important as a source of income while 27 per cent strongly agreed. Only 3 per cent disagreed. All the traders agreed that hides and skins are an important source of income with 50 per cent strongly agreeing and another

50 per cent agreeing. Despite the many challenges the respondents were facing in the hides and skins trade, most of them still valued it as a worthwhile investment. According to research work done in Rome by (Leach and Wilson, 2009) the global market for hides and skins is increasingly important. In the past, many countries had a laissez-faire attitude to hides and skins and allowed export in the raw state. Some countries then looked upon them more seriously as a national resource of strategic importance and prohibited exports in unprocessed form. Domestic processing of hides and skins was considered to provide extra employment, while adding value to manufactured products destined for export, as in Ethiopia in the 1970s and 1980s.

5.2 Conclusions

Based on the findings of this study, the following observations and conclusions can be made:

i) The youth were not vibrant in the hides and skins trade in that the most active age group was between 46 - 65 years old most of whom had no formal education. Additionally, there was minimal participation of females in the hides and skins trade; they comprised of only 10 per cent of flayers and none amongst the traders interviewed.

ii) The mode of supply i.e. how and when the hides and skins were availed to the traders from flayers was observed to be the most important factor determining the quantities of hides and skins that were traded in Wajir County.

iii) Training was found to be the most important factor that affected quality and quantity of hides and skin produced in Wajir County.

iv) Capital was the most important factor that affected hides and skins production collection and quality.

v) There were indeed great economic losses from non-collected hides and skins in Wajir County amounting to Kshs.3.84 million annually to the pastoralists and up to Ksh.400000 in form of lost taxes.

vi) Branding of livestock indiscriminately was also observed to cause economic losses, in addition to the losses already incurred from non-collection of hides and skins. The loss from livestock branding amounted to Ksh.1.64 million annually which is a great but avoidable loss.

vii) Religious and cultural festivities were observed to have an effect on the quantities of hides and skins produced. This was especially so during religious festivities where mass slaughter of livestock occurred especially in the homesteads.

5.3 Recommendations

To improve quantity and quality of hides and skins production in Wajir County based on the above observations and conclusions the following recommendations were made;

i) In an attempt to include more youth and women in the hides and skins trade, Wajir County Government should deliberately organize trainings for youth and women groups about engaging in the hides and skins trade.

ii) Wajir County Government should improve infrastructure to enable collection and delivery of hides and skins from all corners of the County.

iii) Training having been shown as the most important factor affecting quality and quantity of hides and skins produced. Educative forums on the importance of the hides and skins resource should be promoted.

iv) Wajir County Government, in collaboration with partners, should boost the capacity of the already existing actors in the hides and skins trade. They should also build

capacity of new players in the industry especially the youth willing to take up hides and skins as a source of livelihood by encouraging them to take up the youth fund as a source of capital.

v) Public education fora should be organized to demonstrate to the pastoralists which parts on the animals' bodies should be used for branding. This would reduce greatly the losses resulting from downgrading of hides and skins and leathers due to indiscriminate branding.

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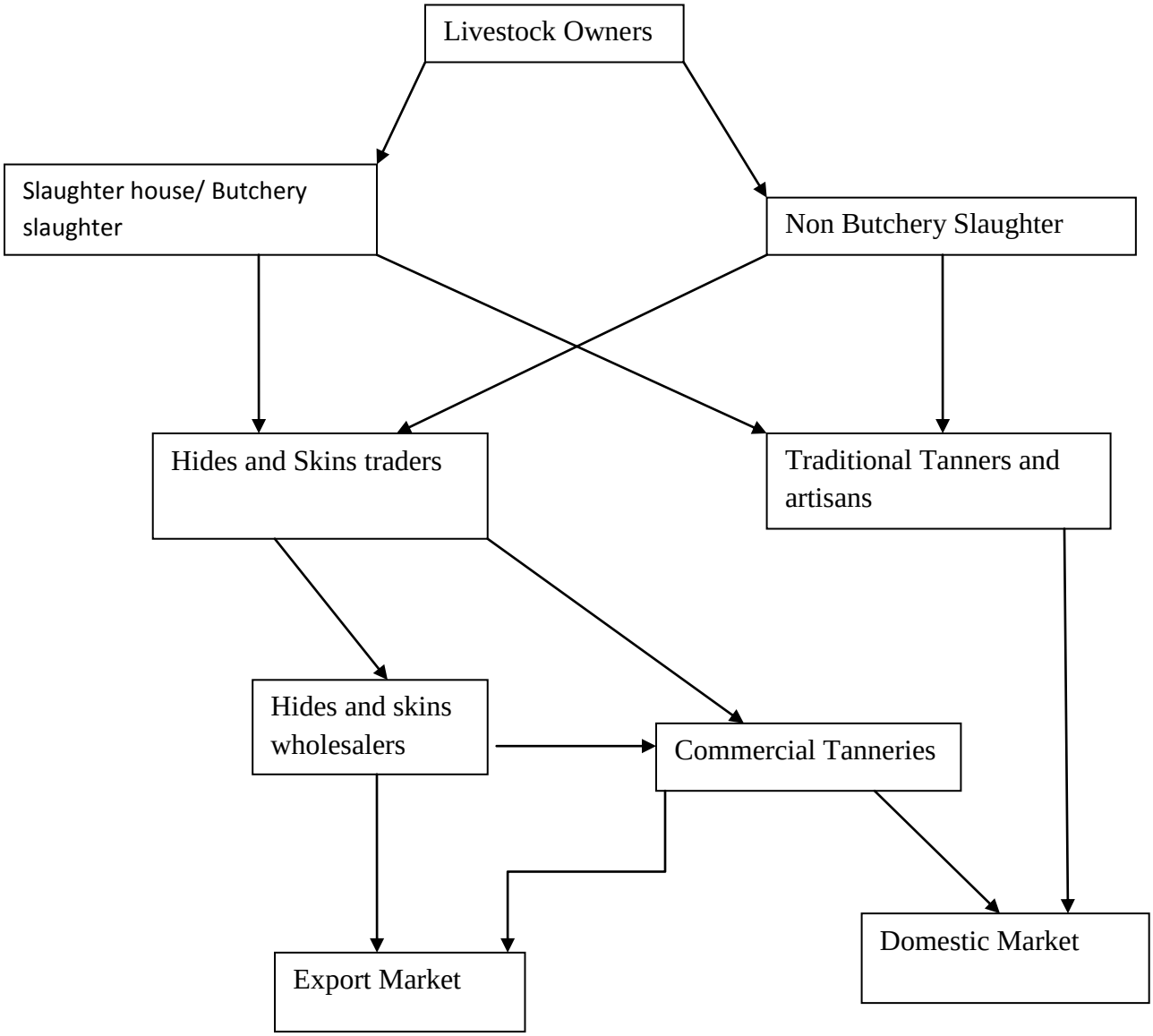
APPENDICES

Appendix I: Marketing channels for hides and skins inKenya



The hides and skins value chain in Kenya

Appendix II: Questionnaire for Flayers

Title: Factors Influencing the Performance of Hides and Skins Sub – Sector and associated Economic Losses in Wajir County, Kenya

Introduction:

This study intends to investigate the economic effects due to non-collected hides and skin in the Pastoral communities of Wajir County, Kenya. The questions in this questionnaire are purely meant for academic purposes only and all information given will be treated as confidential. This questionnaire is to collect data from flayers in Wajir County which will be use to investigate the economic impact of non-collected hides and skins in the Pastoral Communities of Wajir County.

Instructions

Answer all the questions by filling in the blank spaces provided or put a tick (√) where necessary.

SECTION A –Demographic characteristics

Sub county……Ward ……Village……

1. Gender:

    [1] Male

    [0] Female

2. Level of Education

    [1] Primary

    [2] Secondary

[3] Tertiary

[4] Adult - education

[5] Informal

[6] None

3. Age of the respondent:

……..

SECTION B - Economic value of non-collected hides and skins in Wajir County

4. Do you agree that hides and skins have any economic value (source of income).

   Strongly Agree [1] Agree [2] Disagree [3] strongly disagree [4]

5. How many livestock do you slaughter, flay and cure per month?

Species	**No. of carcass Flayed Per Month**	**Cured hides and skins**		**[3]Damaged during flaying and curing**
		[1]Wet Salted	**[2]Air Dried**	
Goats				
Sheep				
Cattle				
Camel				

6. What is the selling price per piece of wet salted hides and skins relative to air dried ones?

Species	**Selling Price(Ksh)/piece**	
	[1]Wet Salted	**[2]Air Dried**
Goats		
Sheep		
Cattle		
Camel		

7. Where are the hides and skins stored

   [1] In a banda/ shed

   [2] In the house

   [3] In the open

   [4] Other (Specify) ……

8. How do you rate the storage facilities selected above?

   Poor [1].Fair [2]. Good [3]. Excellent [4]

9. Have you ever received any training on flaying/curing/storage /marketing?

   [1] Yes

   [0] No

10. What kind of tool do you use for flaying?

    [1]Kitchen knife

[2]Flaying knife

[3]Other (Specify) ……..

11. Apart from hides and skins from the slaughter slabs and houses, do you collect hides and skins from individual Pastoralists' for curing storage and sale per months?

    [1]Yes

    [0]No

12. Where do you sell the collected hides and skins?

Other Collectors	Traders	Tanneries

13. Do you agree that all hides and skins from the pastoralists are collected?

    Strongly Agree [1] Agree [2] Disagree [3]

14. If you disagree, which reasons below cause non collection of hides and skins?

    [1] Poor quality hides and skins

    [2] Vast distances

    [3] Lack of enough capital

    [4] Other (Specify)……..

15. Do the non-collected hides and skins have any economic value

    [1] Yes

    [0] No

SECTION C: SELECTED SOCIOECONOMIC FACTORS AFFECTING NON-COLLECTION OF HIDES AND SKINS.

Religion and cultural practices

16. a) Do you slaughter any livestock during religion or cultural festivals?

[1] Yes

[0] No

17. If yes, state the festive and the number slaughtered

Cultural festive (e.g weddings, funeral)	**Livestock species**	**No. of hides and skins from slaughtered**		**Unit Cost**
		Slaughtered	**Collected**	
[1] Religious festivals e.g. Iddurfitr	Cattle			
	Sheep			
	Goat			
	Camel			
[2]Weddings	Cattle			
	Sheep			
	Goat			
	Camel			
[3] Funerals	Cattle			
	Sheep			
	Goat			
	Camel			
[4] Other	Cattle			

(Specify) …….	Sheep			
	Goat			
	Camel			
	Sheep			
	Goat			
	Camel			

18. What do you do with the hides and skins flayed during religion and cultural festive?

Livestock species	**Uses of hides and skin**		
	[1] Sell	**[2] Domestic use**	**[3]Others (Specify)…….**
Cattle			
Sheep			
Goat			
Camel			

19. State the number of uncollected hides and skins during festive seasons and their value by livestock species?

Livestock species	**Number**	**Economic value**
[1] Cattle		
[2] Sheep		
[3] Goat		

[4] Camel		

20. Who flays which livestock species according to gender (either male or female Pastoralists?

Gender flaying the slaughtered livestock	**Cattle**	**Value(ksh)**	**Sheep**	**Value (ksh)**	**Goats**	**Value (ksh)**	**Camels**	**Value (ksh)**
[1] Male								
[0] Female								

21. a) How does migration affect collection of hides and skins?

Livestock species	**[1]Highly affect**	**[2]Moderately affect**	**[3] Slightly affect**
Cattle			
Sheep			
Goat			
Camel			

b) Which of the following reasons concur with your answer in a above

[1] It increases distances traversed for collection

[2] It increases chances for loss or damage of hides and skins

[3] It breaks the links for sourcing of hides and skins

[4] Other (Specify) …….

SECTION D: ATTITUDE AND AWARENESS ON ECONOMIC IMPORTANCE OF UN COLLECTED HIDES AND SKINS

22. Do you feel un collected hides and skin can be of economic importance as a source of income?

    [1] Yes

    [0] No

23. How did you get information on economic importance of hides and skins?

    [1] Extension services

    [2] Traders

    [3] Electronic channels

    [4] Other (Specify)…….

    [5] No idea

24. How was the information helpful in terms of collection of hides and skins?

Livestock species	**[1]Very Helpful**	**[2]Moderately Helpful**	**[3] Slightly Helpful**
All			

25. How was the information important in terms of distribution and sale to traders?

Livestock species	**[1]Very Helpful**	**[2]Moderately Helpful**	**[3] Slightly Helpful**
All			

SECTION E: PRODUCTION FACTORS AFFECTING UN COLLECTED HIDES AND SKINS

Capital

26. What factors affect the purchase of hides and skins from community members?

    [1] Availability of hides and skins

    [2] Quality of hides and skins

    [3] Lack of sufficient capital

    [4] Other (Specify) ……..

27. What factors affect the type and number of tools used for flaying?

    [1] Awareness of the importance of the hides and skins resource

    [2] Availability of recommended flaying tools

    [3] Lack of capital

    [4] Other (Specify) ……

28. How does the structure of storage affect quality of hides and skins?

Livestock species	**[1] Highly affect**	**[2] Moderately affect**	**[3] Poorly affect**
Cattle hide			
Sheep skin			
Goat skin			
Camel hide			

27. How do you collect hides and skins from individual Pastoralists?

    [1] By Foot

    [2] By van

[3] By Motorcycle

[4] By Donkey carts

[5] Other (Specify) …….

28. How does capital (land, labor etc) affect the collection of hides and skins?

Capital	**Livestock species**	**[1]Highly affect**	**[2]Moderately affect**	**[3]Poorly affect**
Labor	Cattle hides			
	Sheep skin			
	Goat skin			
	Camel hide			
Entrepreneurship	Cattle hides			
	Sheep skin			
	Goat skin			
	Camel hide			
Capital	Cattle hides			
	Sheep skin			
	Goat skin			
	Camel hide			

29. Do you have enough labor to flay and collect hides and skins?

[1] Yes

[2] No

30. If yes, how does labor affect quality of hides and skins?

Livestock species	**[1]Highly affect**	**[2]Moderately affect**	**[3]Poorly affect**
Cattle hide			
Sheep skin			
Goat skin			
Camel hide			

31. Have you ever received training in flaying?

    [1] Yes

    [0] No

32. If yes, how did the training affect the quality and quantity of hides and skins produced?

Livestock species	**[1]Highly affect**	**[2]Moderately affect**	**[3]Poorly affect**
Cattle			
Sheep			
Goat			
Camel			

Thank you for your cooperation

Appendix III: Questionnaire for Traders

Title: Title: Factors Influencing the Performance of Hides and Skins Sub – Sector and associated Economic Losses in Wajir County, Kenya

Introduction:

This study intends to investigate the economic effects due to non-collected hides and skin in the Pastoral communities of Wajir County, Kenya. The questions in this questionnaire are purely meant for academic purposes only and all information given will be treated as confidential. This questionnaire is to collect data from traders in Wajir County which will be used to investigate the economic impact of non-collected hides and skins in the Pastoral Communities of Wajir County.

Instructions

Answer all the questions by filling in the blank spaces provided or put a tick (√) where necessary.

SECTION: GENERAL INFORMATION (Demographic characteristics)

Sub county……..…….

Ward ……Village……

29. Gender:

[1] Male

[0] Female

30. Level of Education

[1] Primary

[2] Secondary

[3] Tertiary

[4] Adult education

[5] Informal

[6] None

31. Age of the respondent:

.....

SECTION B - Economic value of non-collected hides and skins in Wajir County

32. Do you agree hides and skin have economic value?

[1] Disagree	[2] Agree	[3] Strongly Agree

33. If you agree, why do we have non collected hides and skins

.....

.....

.....

How long have you been in the hides and skins business?

.....

34. Who are your main suppliers of hides and skins?

[1] Collectors

[2] Farmers

[3] Hides and skins brokers

[4] Butcheries

[5] Other (Specify) …….

35. How often do you collect hides and skins from the Pastoralists and flayers (individual Pastoralist)?

[1] Daily

[2] Weekly

[3] Fortnightly

[4] Monthly

[5] Other (Specify) …….

36. Who determine the prices of hides and skins?

[1] Self

[2] Buyers

[3] By negotiation

[4] Buyers (Tanners, other traders)

[5] Others (Specify) ……...

37. What kind of hides and skins do you buy from the collectors and what is the average buying price for?

Species	**Cured hides and skins**		**[3]Freshly Flayed**	**[4]Damaged**
	[1]Wet Salted	**[2]Air Dried**		
Goats				
Sheep				
Cattle				

Camel				

38. What was the quantity of hides and skins did you purchase last year?

Species	Number collected	
	[1] Wet Salted	[2] Air Dried
Goats		
Sheep		
Cattle		
Camel		

39. Do you agree that, all hides and skins flayed are supplied to you by the flayers and the collectors?

Yes [1], No [0]

40. If your answer is No, which of the following reasons relate to your answer above?

[1] Poor prices offered for the hides and skins

[2] The hides and skins are used for other ways purposes other than being sold

[3] Some hides and skins are thrown away

[4] Other (Specify).....

41. What are some of the challenges you face in purchasing hides and skins for resale?

[1] Financial constraints

[2] High prices

[3] Lack of handling capacity

[4] Lack of market for more

[5] Insufficient supply

[6] More (Specify) …….

42. What criteria do you use to determine the buying price form the collectors?

[1] Size

[2] Weight

[3] Substance

[4] Shape/ Pattern

[5] Source

[6] Other (Specify) ……

43. What major defects did you observe in hides and skins? Tick appropriately

Defects	Goats skin	Sheep skin	Cattle hide	Camel hide
[1] Brand marks				
[2] Broses				
[3] Poor pattern				
[4] Fallen hides				
[5] Putrefaction				
[6] Dirtiness				
[7] Improper bleeding				
[8] Other (Specify)				

44. What is the difference between the price of hides and skins with brand marks in comparison to those without?

Species	**Price**	
	[1] With Brand Marks	**[2] Without**
Goats		
Sheep		
Cattle		
Camel		

18. Where do you sell hides and skins?

    [1] Wholesalers

    [2] Tanneries/ Factories

    [3] Other traders

    [4] Other (Specify)…….

19. What is the average selling price for?

Species	**Price**	
	[1] Wet Salted	**[2] Air Dried**
Goats		
Sheep		
Cattle		
Camel		

20. Who determines the selling prices?

    [1] Self

[2] Buyers

[3] Negotiation

[4] Other (Specify) ……

21. What do you do if the prices are un- favorable?

[1] Preserve (drying, salting)

[2] Take to other market

[3] Sell at lower price

[4] Storing

[5] Other (Specify)……

22. How do you store the hides and skins before sale?

[1] Salted

[2] Dried

[3] Other (Specify) ……..

23. What technical/ support have you received on the collection of hides and skins?

[1] Training/ extension

[2] Quality assurance

[3] Technical follow-up

[4] Incentives

[5] Other (Specify)…….

24. Are all the hides and skin collected and stored sold?

[1] Yes

[0] No

25. If no, state the numbers not sold for various species?

Species	No. of non-collected Hides and Skins		Dead livestock due to drought, predation, disease and other causes
	[1]Wet Salted	[2]Air Dried	[3] Fallen Hides and Skins
Goats			
Sheep			
Cattle			
Camel			

SECTION C: SELECTED SOCIOECONOMIC FACTORS AFFECTING COLLECTION OF HIDES AND SKINS.

Religion and cultural practices

26. State the average number of hides and skins collected your store during the cultural and religion practices?

Cultural/ Religious	**Livestock species**	**No. of hides and skins from received**	**Unit Cost in Ksh.**
[1] Religious festivals (e.gidd..)	Cattle		
	Sheep		
	Goat		
	Camel		
[2] Weddings	Cattle		
	Sheep		
	Goat		
	Camel		

[3] Funerals	Cattle		
	Sheep		
	Goat		
	Camel		
[4]Other (Specify).....	Cattle		
	Sheep		
	Goat		
	Camel		
	Sheep		
	Goat		
	Camel		

27. Do you collect all hides and skins during festive seasons?

    [1] Yes

    [0] No

28. If No, state the reasons why?

29. How do socio-cultural factors affect supply of hides and skins from the collectors and flayers?

Livestock species	**[1]Highly affect**	**[2]Moderately affect**	**[3] Poorly affect**
Cattle			
Sheep			

Goat			
Camel			

SECTION D: ATTITUDE AND AWARENESS ON ECONOMIC IMPORTANCE OF NON COLLECTED HIDES AND SKINS

30. Do you agree that hides and skins are an important contributor to livelihoods?

[1] Disagree	[2] Agree	[3] Strongly Agree

31. In your opinion, how do you regard the importance of the hide and skins resource?

[1] Not Important	[2] Important	[3] Very Important

32. How did you get information on economic importance of hides and skins?

    [1] Extension services

    [2] Traders

    [3] Electronic channels

    [4] Other (Specify)

    [5] No idea

33. If the answer in 32 above is [1-4], in which following ways was the information helpful?

    [1] Increase in the numbers of hides and skins purchased

    [2] Increased quality of hides and skins purchased

    [3] Increased income due to sale of quality hides and skins

[4] Other (Specify).....

34. What should be done to improve efficacy in collection of hides and skins?

.....

.....

SECTION E: PRODUCTION FACTORS AFFECTING UN COLLECTED HIDES AND SKINS

Capital

35. Which of the following factors of production affect the purchase of hides and skins from community members/ collectors the most?

[1] Capital

[2] Labor

[3] Land

[4] Entrepreneurship

36. How does the structure of storage affect quality of hides and skins?

Livestock species	**[1] Highly affect**	**[2] Moderately affect**	**[3] Poorly affect**
Cattle			
Sheep			
Goat			
Camel			

37. What means do you use to take hides and skins to the buyer?

[1] Foot

[2] Hired Vehicle

[3] Motorcycle

[4] Donkey carts

[5] Other (Specify) …….

38. How does capital affect the collection of hides and skins?

Livestock species	**[1]Highly affect**	**[2]Moderately affect**	**[3]Poorly affect**
Cattle			
Sheep			
Goat			
Camel			

39. Do you have enough labor collect, cure and store hides and skins?

[1] Yes

[0] No

40. If yes, how does labor affect the collection of hides and skins?

Livestock species	**[1]Highly affect**	**[2]Moderately affect**	**[3]Poorly affect**
Cattle			
Sheep			
Goat			
Camel			

Thankyou for your cooperation

Appendix IV: Key informant interview guide

Title: Factors Influencing the Performance of Hides and Skins Sub – Sector and associated Economic Losses in Wajir County, Kenya

Introduction:

This study intends to investigate the economic effects due to non-collected hides and skin in the Pastoral communities of Wajir County, Kenya. The questions in this interview guide are purely meant for academic purposes only and all information given will be treated as confidential.

Instructions

Answer all the questions by filling in the blank spaces provided or put a tick (√) where necessary.

A) County Director of Veterinary Services

Name: ……

1. How can you rate hides and skins business in Wajir County
    a) Very good ……..
    b) Good ……..
    c) Fair …….
    d) Poor ……..
    e) Very Poor ……..
2. What is the reason(s) for your answer above

……

……

……

3. Does your department keep livestock mortality records

   a) Yes

   b) No

4. If yes, what were the livestock mortalities due to diseases in the period 2009 – 2011

Species	2009	2010	2011
Sheep			
Goats			
Cattle			
Camels			

B) County Leather Development Officer

Name: …….

5. How can you rate hides and skins business in Wajir County

   f) Very good ……..

   g) Good ……..

   h) Fair …….

   i) Poor ……..

   j) Very Poor ……..

6. What is the reason(s) for your answer above

……

……

……

……

7. How do you assess for quality of hides and skins

……

……

……

8. What kind of quality of hides and skins are common in Wajir County in order of importance

……

……

……

……

9. What is the reason (s) for your answer above

……

……

……

……

10. Do you encounter hides and skins defects in Wajir County

    a) Yes

    b) No

11. If yes, list the major defects you encounter in order of importance

……

……

……

……

……

12. What is the reason(s) for your answer above

……

……

……

……

……

13. What would you suggest as solutions to solve the problems encountered in 11 above

……

……

……

……

……

14. Are all the hides and skins produced in Wajir County collected effectively

a) Yes

b) No

15. If no, what are the reasons

……

……

……

……

16. What solutions would you suggest

……

……

……

……

17. Is preservation of hides and skins practiced in Wajir County

……

……

……

……

18. Which preservation techniques are used in order of importance

……

……

……

……

19. Give an explanation for the listed order

……

……

……

……

20. Which preservation technique is best suited for Wajir County

……..

21. Is grading of hides and skins practiced in Wajir County

a) Yes

b) No

22. If yes, which grades are most common in order of importance

……..

23. Do you charge any levies to traders in hides and skins

a) Yes

b) No

24. If yes, how much is charged and using which criteria

……

……

……

C) Kenya Wildlife Service

25. Are there predators in Wajir County

a) Yes

b) No

26. How can you rate the incidences of predation on livestock by wildlife

a) High

b) Very high

c) Low

d) Very low

27. Do you keep records of the number of livestock predated on by wildlife

a) Yes

b) No

28. If yes, what were the number of livestock predated on by wildlife in the period 2009 – 2011 by the following species

Species	2009	2010	2011
Sheep			
Goats			
Cattle			
Camels			

29. What advice do you give to prevent or reduce such incidences

……

……

……

……

D) National Disaster Management Authority

30. How common is the occurrence of drought in Wajir County

a) Very common

b) Common

c) Not common

d) Rarely

31. If drought occurs, does it affect the dynamics of livestock keeping in Wajir County

    a) Yes

    b) No

32. Do you keep data for livestock mortality due to drought

    a) Yes

    b) No

33. If yes, what were the numbers of livestock that died due to drought in the period 2009 – 2011, for the species tabulated below

Species	2009	2010	2011
Sheep			
Goats			
Cattle			
Camels			

Thank you for your cooperation