Evaluation of Economic Losses from the Hides and Skins Subsector in Wajir County, Kenya

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Abstract: *Hides and skins subsector is a key area from which many livelihoods are derived among the pastoral communities of Wajir County. Due to high number of uncollected hides and skins in this County, economic losses from this subsector were assessed to come up with ways in which they could be mitigated. The study adopted a descriptive study design whereby from 88574 households in Wajir County, purposive sampling was done to come up with a sample size of 106 composed of 92 flayers and 14 traders. Data collection was done by use of questionnaires and the number on non-collected hides and skins was obtained using Bayes theorem. This study found that many hides and skins remains uncollected with a percentage of 22.57% for goat, 23.52% for sheep, 24.25% for cattle hides and 23.04% for camel hides. In addition, the pastoralist in Wajir County lost Ksh.3, 837,856 million while the Wajir County government lost Ksh.403, 940 in form of taxes from uncollected hides and skins. It was concluded that the county government should offer extension services and create awareness on the economic importance of hides and skins. This will improve the quality and increase the number of collected hides and skins.*
Keywords - *Economic, Hide, Livelihood, Quality, Skins, Uncollected*

I. Introduction

Kenya has a land area of 582 646 km^2, and 80% of this land is arid and semi-arid land (ASAL) with very low Potential for crop production [1]. These arid and semi-arid zones contribute to over 70% of the total livestock population and this make Kenya the third largest livestock holder in Africa [2, 3]. In ASALs, livestock sector employs approximately 90% of the workforce and provide 95% of household income [4]. Livestock in these areas are mostly kept for meat, milk and wool. When these animals are slaughtered, they provide valuable by-products called hides and skins. Processing of hides and skins into leather has a high potential to address important issues in the societies such as rural development, creation of wealth and employment [2]. Kenya's hides, skins and leather industry contribute around 4 per cent of agricultural GDP and 1.5 per cent of overall GDP [5]. For a long time this sector has been neglected but thanks to the government of Kenya lead by his excellent the president Uhuru Kenyatta which has identified hides, skins and leather sector as a key pillar which will enable Kenya to be an industrialized Country by year 2030. Selection of Leather as an economic driver to Kenya Vision 2030 is informed by the observed high potential of the sub-subsector currently endowed in a livestock resource base standing at 17.5 million cattle, 27.7 million goats, 17.1 million sheep and 4 million camels whose off-take yields hides and skins [6]. Construction of Kenya Leather Park at Kinanie (Machakos) will reduce certain capital and Operating costs through provision of centralized effluent treatment and technology development so as to create a globally competitive leather industry that will attract foreign direct investment in export oriented manufacturing while expanding the local job market [6].

Although many livestock are found in ASAL region, the infrastructure is very poor and many hides and skins are not collected. In addition, most of the people are illiterate and are not aware of the economic value of hides and skins. Due to lack of access to market and poor awareness on the economic values of hides and skins some of the farmers dispose them to the environment immediately after slaughter. Wajir County is one of the Counties found in ASAL and Pastoralism is the main source of livelihood among the households. According to KNBS, (2009) Wajir has an estimated livestock population of 794,552 cattle, 1,406,883 Sheep, 1,866,226 Goats, and 533,651 Camels [7]. Since most of the animals are slaughtered in backyard slaughtering or informal Slaughter many hides and skins remain uncollected, and income and employment opportunities that might be associated with their use are lost [8]. A research was conducted in this region to calculate the economic loss due to uncollected hides and skins and to put way forward to maximize hides and skins collections.

II.   Materials and Methods

1.1 Investigation of the number of hides and skins collected in Wajir County in 2014

From 88574 households in Wajir County, purposive sampling was done to come up with a sample size of 106 composed of 92 flayers and 14 traders. Questionnaires were used to get hides and skins quantities obtained from various slaughter slabs all over Wajir County. In addition, hides and skins traders' records and figures were also incorporated to get the total quantities of hides and skins traded in the County in 2014. Quantities obtained were then categorized according to method used for preservation.

1.2 Investigation of prices offered for various hides and skins depending on curing method in 2014

Using questionnaires, prices for hides and skins from different species were investigated. It was also found out that prices varied according to method used for preservation. The prices were categorized in to two, i.e. the prices offered to flayers by traders and the prices that traders sold their hides and skin to other parties including tanners and wholesalers.

1.3 Use of Bayes theorem in determination of non – collected hides and skins and resulting economic losses

This was determined by use of *Bayes* theorem [9] whereby from the quantities of hides and skins collected in Wajir County in 2014, clusters of hides and skins quantities were generated i.e.Wajir town, Buna, Bute, Habaswein and Abakore clusters. Non-collected hides and skins were then computed using *Bayes* theorem of probability in cluster-wise manner as illustrated below.

Bayes theorem of probability 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) = P(E) * P (S|E)
P(S|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, $P\left(\frac{E}{S}\right) = \frac{P(E) \times P\left(\frac{S}{E}\right)}{\sum_{i=1}^{n}\left(P(E_i) \times P\left(\frac{S}{E_i}\right)\right)}$

1.4 Determination of lost taxes from non-collected hides and skins

Lost taxes from non-collected hides and skins were determined from the average cluster losses of hides and skins, multiplied by the taxes charged per piece of hide or skin. In addition, the total tax lost in permits considering that every truck is charged one hundred shillings for a hides and skins consignment.

1.5 Data analysis

Statistical Package for the Social Sciences (SPSS) Version 22 was used for data entry and descriptive analyses. Data was described using charts and percentages. *Bayes* Theorem was used to calculate the quantity of uncollected hides and skins.

III.   Result and Discussion

Table 0.1: Number of hides and skins collected in Wajir County in 2014

Type	Wet salted	Air & sun dried	Uncured	Sub total
Goat skins	17992	27402	10866	56260
Sheep skins	15935	25379	10911	52225
Cattle hides	926	1226	435	2587
Camel hides	2493	3860	1208	7561
Grand total	**37346**	**57867**	**23420**	**118633**

Percentage proportion of hides and skins produced in Wajir County in 2014 by method of curing

■ Wet salted ■ Air & sun dried ■ Uncured
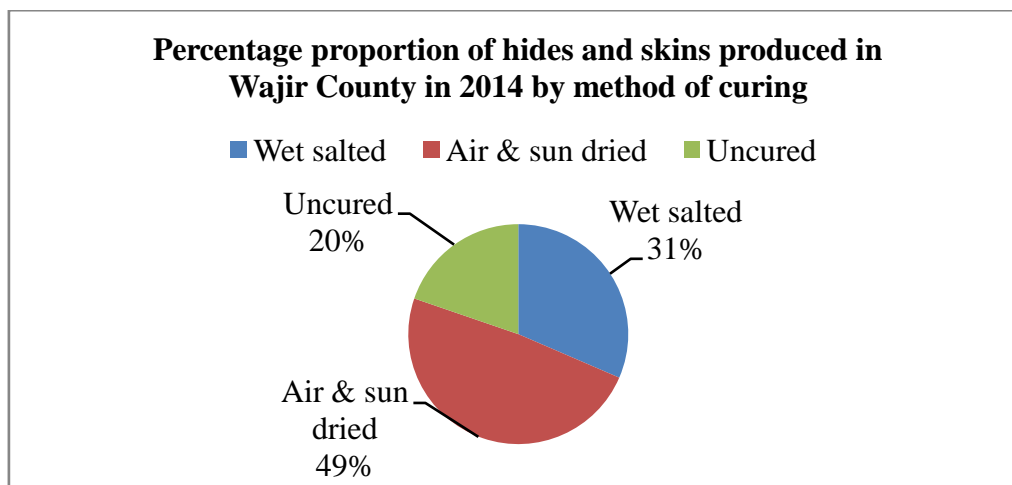
Uncured 20%
Wet salted 31%
Air & sun dried 49%

Figure 0.1: Methods of curing hides and skins obtained from various species in Wajir County in 2014

1.6 Prices offered for various hides and skins depending on curing method in 2014

Table 0.2: Prices for flayers to traders

Species	Prices in (Ksh.		
	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

Table 0.3: Prices for traders to wholesalers and tanners

Species	Prices in (Ksh.		
	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

Table 0.4: Non-collected hides and skins in Wajir County in 2014

Clusters	Goat Skins		Sheep Skins		Cattle Hides		Camel Hides		Grand Total
	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

Table 0.5: Tax loss from un-collected hides and skins in Wajir County in 2014

Clusters	Goat Skins		Sheep Skins		Cattle Hides		Camel Hides		GRAND TOTAL
	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 loss (Ksh.)	163,970		160,590		12,420		33,960		370,940

Hides and skins in Wajir County were traded in three forms (wet salted 31%, uncured 20% air and sun drying 49%). Most hides and skins were sun and air dried and yet wet salted hides or skins are bought at high prices in Kenya [6]. Although the owners of the tanneries look at several qualities to determine the prices to offer for hides and skins including species, curing (preservation) technique, size, shape, extent of defects and weight, the traders would rarely reject any hides and skins largely because the quantities availed were never sufficient. Hence, quantities availed meant more to the traders while quality was not emphasized upon.

The study found that many hides and skins remains uncollected in Wajir County with a percentage of 22.57% for goat, 23.52% for sheep, 24.25% for cattle hides and 23.04% for camel hides. A study in Kenya by Ahmed (2016) reported that 14% cattle hides, 34% sheep skins and 29% goat skins remains uncollected and this lead to loss of income and employment that are associated with their uses [5]. In Ethiopia the demand for sheep and goat skins is very high leading to high collection of 92% and 86% respectively while the demand for cattle is lower leading to low collection of 38% [10]. High prices encourages the farmers to sell their hides and skins [10].

When economic loss was calculated, the study found out that the pastoralist in Wajir County lost Ksh.3, 837,856 million in the year 2014 from uncollected hides and skins. This was determined from the average of non-collected hides and skins from the upper and lower limits multiplied by the mean price for hides and skins. In addition, Wajir County government lost Ksh.403, 940 in form of taxes from uncollected 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 also that a truck usually carries a consignment of one thousand skins or five hundred hides, an additional Ksh.33000 was lost in permits in that, every truck is charged one hundred shillings for a hides and skins consignment. Developing tangible bridges with butchers, traders, exporters and tanners have been suggested to reduce the losses in leather sector [11]. It is envisaged that working closely with farmers and producer by creating awareness on basic aspect of handling animals, hides and skins through extensive improvement or extension services could recover about 48% loss of hides/skin defects that may cause the hides to be rejected or not collected [11]. To reduce the number of uncollected hides and skins, the Wajir County Government should include more youth and women in the hides and skins trade. This should be done by encouraging self-employment by providing funds for purchasing raw hides and skins, curing and selling them to hides and skins traders. This will reduce the number of uncollected hides/skins and idle time especially from the youth which would in turn keep them from various vices e.g. radicalization.

IV. Conclusion

It was evident from the study that the quantities of uncollected hides and skins in Wajir County are substantial and lead to great economic losses both to individual pastoralists in form of income and also the County and National governments in form of taxes. It was concluded that the county government should offer extension services and create awareness on the economic importance of hides and skins. This will improve the quality and increase the number of collected hides and skins.

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