

Assessments of Challenges and Marketing Channels of Skin and Hide in Eastern Ethiopia

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Abstract

A cross sectional study was conducted from October 2015 to September 2017 on skin and hide defects, handling practice and marketing channel in east and west Hararghe zone, Oromia region. In this study, both purposive and random samplings were used to select the districts (Babile, Haramaya, Chiro and Chiro zuria), PAs and households from the two zones. A total of 247 respondents from households, butcheries, municipal abattoirs, middlemen and local skin and hide collectors were interviewed. Direct wet skin and hide observation and follow up investigation was also made on 62 cattle hide, 86 sheep and 99 goat skins from 136 different sites to collection centers along the marketing channel to the tannery plant. The result of the study showed 17% of the respondents had no understanding on contribution of skin and hide in national economy and only 34% of the participants had sold skin and hide to local collectors and traders whereas 12.1% of the participants preferred to use skin or hide for coverings of home materials. The study also revealed involvement of illegal traders, poor infrastructures, uneven distribution of collectors were some of the main challenges in skin and hide marketing and rejection at tannery because of damages during flaying and preslaughter factors like skin diseases and ectoparasites, poor preservation techniques, storage and transportation methods were identified as the main factors downgrading skin and hide. Of the 247 wet blue skin and hides examined at Mojo tannery PLC only 4.9% fall in export level grading score (grade 1-4), 27.1% were rejected and the left fall in grading level supplied to local market. Hence, there was knowledge gap in skin and hide handling practices and poor market access. Therefore, awareness creation and building link amongst producer to collector, trader and tannery were recommended.

Keywords: Defects; Ethiopia; Grading; Hararghe; Skin and hide; Marketing channel

Introduction

Ethiopia is generously endowed with livestock resources that put the country in first rank in Africa with livestock population of 55.03 million cattle, 27.35 million sheep, and 28.16 million of goats [1]. The contribution of livestock sector in Ethiopian economy, as in many developing countries, is varied but substantial. Livestock contribute to the production of food (meat, milk, eggs and blood), industrial raw materials (wool, hair, skins and hides) input for crop production (draught power and manure) and export earnings (live animals, skin and hides). They also generate cash income which can be used to purchase food grain, seeds, fertilizer and farm implements [2,3].

Archeological studies have shown that skins have been used since antiquity as clothes, containers, vessels, bedding and possibly structurally in ancient dwelling place. In recent times, particularly the smooth grain surface of skin and hide being technologically to achieve the surface appearance attractive to leather customers [4]. In Ethiopia hides and skins represents major source of foreign exchange earnings from the livestock sector. In addition, it has a large contribution to the leather industry in the country. From these resources, the country is capable of supplying around 20 million pieces of hides (coats of large animal like cattle) and skins (coat of small ruminants, e.g., sheep and

goats) of varies qualities per year [5]. In the country, the estimated off-take rate is 6.6%, 31.7% and 32% for cattle, sheep and goat, respectively. From this off-take rate, the estimated number of production is 3.1 million hide, 9.9 million sheep skin and 8.6 million goat skins [6].

Ethiopian small ruminant skins, especially sheep skins traditionally have a very good reputation for quality in the world leather market due to their fine grain and compact structure [7]. The unique quality of Ethiopian leather, gives the country a competitive edge over other countries in international markets [8]. In line with this the number industries in Ethiopia are increasing to above 27. These local tanneries have an average capacity of processing 4,000 pieces of hides and 3,000 pieces of skins per day [9]. However, they are working below their capacity.

Apart from fertile ground and potential to produce substantial quantities of hides and skins the country has, the quality of skins and hide supplied by Ethiopia is deteriorating from time to time. As skins and hides are renewable and easily perishable resources, their production is dependent on the rearing, management and disposal of the livestock population [10]. the appearance of skin disease including external parasites with secondary bacterial complication, inappropriate management of animals, faults during slaughtering and improper handling of skin and hide before it reaches tanneries and even branding marks results in an over increasing number of complaints about the quality of skins available to local tanneries and to the export

markets [11,12]. The reason behind the quality of hide or skin is to a large extent related to the amount of damage to the grain (or outside) surface. These damages can be due to external parasites like lice, fleas and ticks that affect the live animals leading to scratch, skin diseases and husbandry practice on the farm or in transport of the live animals (scratches, bruising, or dirt contamination). Damage during slaughter or inappropriate handling or poor preservation techniques are other factors that exacerbate the condition [13]. On the other hand in Ethiopia, since over 90-95% of skins and hides are collected from animals slaughtered at household and PA levels and thus post-slaughter defects are highly expected [5]. The consequences of such defects leads every tannery (or trader) had to adopt customized criteria to select/sort quality of incoming raw hides/skins and outgoing finished leather ultimately resulting in price differences among grades [14].

In addition to skin and hide lesion, the supply of hides and skins in the formal market is low in number and poor in quality. The problem is that large amounts of hides and skins are wasted in the country side and many hides and skins do not reach to tanneries in the required quality [12]. In Ethiopia, the economic loss due to hide and skin defects is very high. These defects are encountered from the time the animal is born until the leather processing is completed due to carelessness in breeding, feeding in living conditions, disease, parasites, handling, slaughtering, preservation, storing and transporting [15]. In Ethiopian tanneries, 35% of sheep and 56% of goat skins have been downgraded and rejected due to defects by external parasites [16]. Over 30% of the hides and skins collected and brought to tanneries were rejected due to defects or low quality [17].

The main predisposing factor of skin and hide to damage are external parasite (like lice, fleece, and ticks) and husbandry practices on the farm or in transport of the live animal (scratches, bruising, or dirt contamination) that affect the live animal leading to skin diseases. Damage during the slaughter, inappropriate handling and poor preservation technique are other factors that exacerbate the condition [13]. The existing poor infrastructure and unclear marketing channel in this sector are also some of the factors contributing in downgrading skin and hides reaching the tanneries.

To achieve rewardable economic benefits and to maximize the Ethiopian national economy, proper utilization of the resources in all areas of the country is very crucial. Accordingly, to back up this national concern and to exploit this resource as a desired level, defect assessment need to be done to improve the quality and quantity of raw materials supplied for tanneries.

Hence the main objectives of this study were:

- To assess major defects and factors contributing to skin and hide rejection in selected districts of eastern and western Hararghe.
- To identify marketing channel of skin and hide and challenges along the marketing channel
- To assess current knowledge of producers and collectors in skin and hide handling practices at study areas

Materials and Methods

Study area

The study was conducted in selected districts of east and west Hararghe zones namely: Babille, Haramaya and Chiro. East Hararghe zone is one of the 18 zones of Oromia National Regional State and

boarded by Somali Regional State from the east direction. Haramaya one of the east Hararghe district is located at 14 km north of Harari regional state capital city at 9°24'N 42°01'E and 9°24'N 42°01'E in the altitudinal range of 1400 to 2340 m.a.s.l. with the mean annual temperature and relative humidity of 18°C and 65%, respectively. Its average temperature is 9.5-24°C with low temperature fluctuation. Climatically the district has two ecological zones of which 66.5% is midland and 33.3% is low land. According to Haramaya district agricultural statistics information, the district has about 63,723 cattle, 13,612 sheep, 20,350 goats, 15,978 donkeys, 530 camels and 42,035 chickens. On the other hand, Babille Woreda is located in east direction of Harar. Babille is bordered on the south and east by the Somali Region, on the west by Fedis, and on the north by Gursum. The altitude of this Woreda ranges from 950 to 2000 meters above sea level. The district is mainly situated in the kola climate with shortage of rainfall. It has a typical pastoral and agro-pastoral setting of the country. It is characterized by a semi-arid climate with an average daily temperature of 20°C to 35°C [18,19].

West Hararghe zone is bordered with Bale in the south, Arsi in the south west, East Hararghe in the east and Afar in the north West. Chiro district/Zuria is of west Hararghe is also another study site of the current investigation. It is bordered by Tullo district in northeast. It is part of former Chiro woreda what was divided for Chiro Zuria and Gemechis woredas and Chiro Town. The highest peak in Chiro is 3574 m.a.s.l. [20,21].

Study design and study population

A cross sectional study was conducted from October 2015 to September 2017 on skin (covering coat of sheep and goats) and hide (covering coat of cattle) defects, handling practice and marketing channel analysis in selected districts of east and west Hararghe zones. The study populations were smallholder farmers and farm holders, skin and hide collectors, traders and restaurant/ hotel owners and butchery found in selected districts of east and west Hararghe zones of the Oromia regional state, eastern Ethiopia.

Sample size determination and sampling technique

Since there is no previous report from east and west Hararghe on assessments on challenges and marketing channels of skin and hide, 50% expected prevalence was considered. Therefore, the formal survey studies sample size was calculated using [22] formula.

$$N=0.25/SE^2$$

$$0.25/0.025=100$$

Where, N=required sample size, SE=Standard Error (5%) at 5% precision and 95% confidence level.

Accordingly a total of 100 respondents were included; however, to increase the precision of the study sample size was increase by 2.47 folds and a total of 247 individuals from both zones were interviewed.

For this study, a multi-stage sampling procedure (purposive and random) was applied to recruit the study districts. Five PAs and households of the chosen districts were randomly selected. After PAs' selection 12 butcheries, and 3 municipal abattoirs, 9 middlemen and 6 skin and hide collection centers of Babille, Haramaya districts, Chiro and Chiro zuria were considered and visited. To assess local people's and collectors' knowledge on skin and hide contribution in national economy, their quality and marketing channels 247 households were

randomly chosen from both zones and interviewed. Beside, interviews and or questionnaires direct wet skin and hide observation and follow up investigation was made on 247 hides and skin (62 hide, 86 sheep and 99 goat skins) from 136 different sites (household level, slaughter slab and slaughtering site/ of “kircha”, hotels and abattoirs) to collection centers to the tannery plant to determine post slaughter defect prevalences. The respondents were also interviewed and or ask to fill questionnaires about their current knowledge and what they are practicing for their work such as drying methods, storage and transportation of hides and skins after collecting from farmers and abattoirs. Finally the wet blue grading level (quality ranks) of the 247 wet blue hides and skins followed up were examined at Modjo tannery and grading scores were recorded.

Study methodology

The first study was assessment of farmers and collectors knowledge on skin and hides economic contribution and handling practices to reduce defects. In this, evaluation on skin disease, skin and hides defects and knowledge on raw skin and hide handling were conducted through semi-structured questionnaires and or interviews. Designed questionnaires were supplemented to randomly selected farmers and other stakeholders whereas those individuals who are unable to read and write (illiterates) were interviewed. From this questioner and or interviews the information about the live animal handling, skin and hide handling, marketing channel, farmer understanding, skin and hide facility for trader, legal control of skin and hide traders were collected.

The other methodology was in-depth field level (at slaughtering sites) investigation of skin and defects at ante-mortem and follow up along the marketing channels. In this, at the collection centers of wet skin and hides detail examination was made and identified defects were recorded. Post slaughter defects due to lack of proper slaughtering skill like cuts, holes and others were identified. At collection centers skin and hides were classified by collectors as: number one (normal), medium and rejected groups. Then from those recorded as fitted for tannery preservation techniques, storage and transportation methods used had investigated. Finally among skin and hides taken to Mojo tannery PLC, only 247 were followed to know their tannery level grading score (quality ranks) given by experienced tannery personals

Data management

The data collected from direct field observation and questionnaires and or interviews were analyzed using SPSS version 20.0. The study variables were analyzed by chi- square and descriptive statistics were also used to calculate the data prevalence or percentages by dividing positive samples for total examined. The confidence level was held at 95% and it was considered as significant when P-value is less than 0.05. Graphs were also used in comparison of the value of study variables.

Results and Discussion

General understanding

In this study, semi-structured questioner was designed and supplied to a total of 247 respondents that comprise of farmers, collectors and hotel or restaurant owners in east and west Hararghe zones to assess challenges and marketing channels of hide and skin. Woreda or PA, Age, Sex, and education level of the participants were considered as study variables in evaluating their current knowledge and

understanding about contribution of skin and hide in national economy. Accordingly 80.2% (198/247) of the respondents had information and knew that skin and hide have significant contribution to the economic development of the country where as 17.0% (42/247) do not knew and even had no information on the role of hide or skin in national economy. On the other hand, in the present study 2.8% (7/247) of the participants were unwilling to respond the questioners. The study showed statistically majority of participants from Haramaya (96.4%) knew that skin or hide contribute in national economy and Bisdimo had the least knowledge than the other woredas/PAs (Table 1).

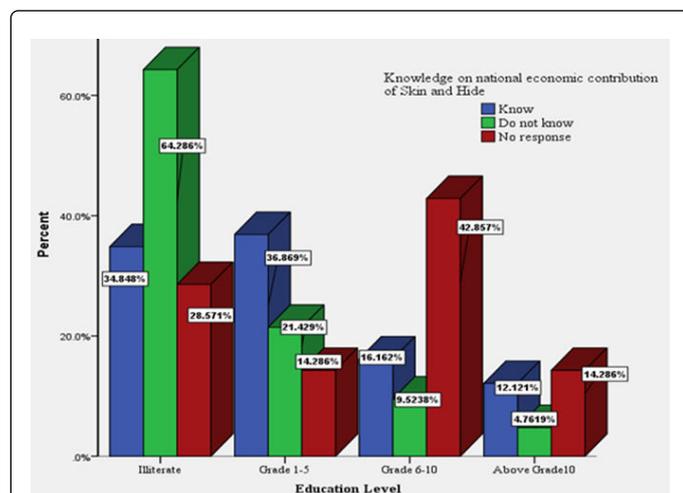
Though our study result indicated existence of knowledge gap in contribution of skin and hide to the national economy, literatures shows Ethiopia has a capable of supplying around 20 million pieces of hides and skins per year [12]. The author also added not only the volume but also the unique quality of Ethiopian leather, some of which are considered to be of prime quality in international markets, gives the country a competitive edge over other countries. According to [6] Ethiopia is ideal for leather production and making leather products, justifying that the country is expected to produce 3.1 million hides, 7.8 million sheep skins and 8.2 million goat skins. On the other hand, there were no differences in understanding among participants’ age groups on the role of hide or skin in national economy. Nevertheless, majority of those who had completed grade 10 and higher classes had good information while most of the respondents from illiterate group had no information than the others (Graph 1).

In current study both male and female had also participated and the result showed male participants had good information than females (Graph 2). This may be due to unequal number of male and female involved in the study and also traditionally engagement in skin and hide marketing is considered as male activity than of women. However [23], reported 54% of the respondents’ involved in his study on assessment of preslaughter hide and skin management in and around Assela and Sagure were females and 46% were males.

Categories	Knowledge on Contribution of Skin and Hide in National Economy			Total	X ² (p value)
	Know	Do not know	No response		
Age group					
18-35 years	81 (89.0)	9 (9.9)	1 (1.1)	91 (36.8)	
36-50 years	79 (76.0)	21 (20.2)	4 (3.8)	104 (42.1)	
50-60 years	34 (75.6)	9 (20.0)	2 (4.4)	45 (18.2)	9.972 (1.26)
Above 60 years	4 (57.1)	3 (42.9)	0	7 (2.8)	
Woreda/PAs					
Babille	38 (86.4)	4 (9.1)	2 (4.5)	44 (17.81)	
Bisdimo	32 (54.2)	25 (42.4)	2 (3.4)	59 (23.89)	
Haramaya	53 (96.4)	2 (3.6)	0	55 (22.27)	45.117 (0.00)
Finkile	16 (76.2)	3 (14.3)	2 (9.5)	21 (8.5)	
Chiro town	40 (88.9)	4 (8.9)	1 (2.2)	45 (18.22)	
Chiro Zuria	19 (82.6)	4 (17.4)	0	23 (9.31)	

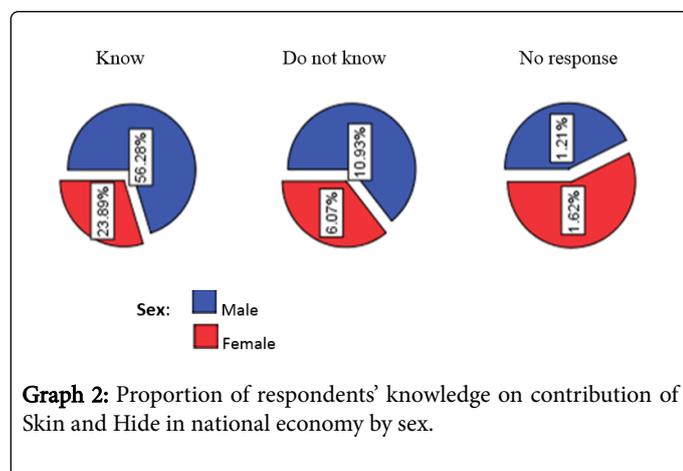
Total	198 (80.2)	42 (17.0)	7 (2.8)	247 (100)	
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Table 1: Respondents' Knowledge on contribution of skin and hide in national economic by Age group and Woreda/PAs.



Graph 1: Proportion of respondents' knowledge on contribution of Skin and Hide in national economy by their education level.

In current study both male and female had participated and the result indicated 56.28% male and 23.89% female knew the role of hide or skin in national economy (Graph 2).



Graph 2: Proportion of respondents' knowledge on contribution of Skin and Hide in national economy by sex.

Marketing channel and market accessibility

The present market price of skin and hide at the study area was assessed and the price was (sheep and goat skins were 5-10 ETB/skin

and cattle hides were 40-60 ETB/hide) 7.5 and 50 ETB in average, respectively. The marketing system and channel were not inviting producers to benefit from skin and hide they have producing. They had limited access to market and even the poor market access they had is also seasonal, where the regular collectors and holiday based collectors engaged to the activity only after getting a call from traders who had transported skin and hide to local tanneries. Some kebeles particularly in Bisidimo and Finkile totally had no market access for raw skins and hides and discarding is common. Because of this, farmers like to use it for different purposes at their home and a number of skin and hides had been damped everywhere at the study area. In connection to this, the current study indicated only 34.0% of the respondents had sell skin or hide and 19.4% had been damping while 34.4% had been using them to prepare different materials such as saddles for packing animals and bedding materials at their homes. 12.1% of the participants had preferred to use skin or hide for other local materials especially drum and other home equipment coverings in traditional manner for beauty purpose (Table 2).

Unlike the current study, in a three month follow up study about 90.3% and 98% farmers in Tiyo and Digelu-tijo woredas, respectively sold sheep skin [6]. However, in agreement to the present study the author reported the availability of the trader is off and on (seasonal) being more accessible during the festival period. Attributing to our study she also explained that the marketing channel in most cases is from primary producer to local collectors to traders and finally to tanneries though there is a probability in which the number of intermediaries increase and also decrease based a need aroused from the tanneries. Asegede [24] also reported that all of the respondents from north Tigray do not sale hides to the market due to household uses like home material preparation. On the other hand, Asegede and Buljan [24,25] reported that 44.14% and 31% of respondents, respectively ascertaining the selling of sheep and goats skin in north Tigray. Such variation may be due to differences in study areas where the people could have different information and awareness. The distance between the study area/district and the local tannery site also may result the variations.

Raw sheep and goat pelts and cattle hide were examined for different defects before being subjected to preservation and tannery based grading. The primary producers and local collectors were also interviewed about preservation method used in drying skins and hides. In connection to this, the result indicated farmers and hotel/restaurant owners and local collectors of our current study had used different preservation methods (sun drying, dry salting, wet salting and rope drying) of skin and hides after slaughtering animals. Accordingly, majority of the respondents (45.7%) preferred sun drying though statistically no difference among preservation methods used at the study areas.

Variables	Woreda/Peasant Association (PA)						Total
	Babille	Bisidimo	Haramaya	Finkile	Chiro town	Chiro zuria	
Skin and hide used utility							
Bedding/Saddle	11 (25.0)	34 (57.6)	11 (20.0)	10 (47.6)	8 (17.8)	11 (47.8)	85 (34.4)
Other local Material	2 (4.5)	3 (5.1)	7 (12.7)	3 (14.3)	10 (22.2)	5 (21.7)	30 (12.1)

Damping	12 (27.3)	17 (28.8)	3 (5.5)	6 (28.6)	6 (13.3)	4 (17.4)	48 (19.4)
Selling	19 (43.2)	5 (8.5)	34 (61.8)	2 (9.5)	21 (46.7)	3 (13.0)	84 (34.0)
X ² (P value)	74.80(0.00)						
Preservation method							
Sun drying	19 (43.2)	28 (47.5)	19 (34.5)	10 (47.6)	23 (51.1)	14 (60.9)	113 (45.7)
Dry salting	9 (20.5)	6 (10.2)	11 (20.0)	3 (14.3)	10 (22.2)	2 (8.7)	41 (16.6)
Wet salting	6 (13.6)	9 (15.3)	11 (20.0)	1 (4.8)	9 (20.0)	4 (17.4)	40 (16.2)
Rope drying	10 (22.7)	16 (27.1)	14 (25.5)	7 (33.3)	3 (6.7)	3 (13.0)	53 (21.5)
X ² (P value)	17.97 (0.264)						
Challenging factors							
Uneven distribution of collectors	1 (2.3)	6 (10.2)	12 (21.8)	2 (9.5)	11 (24.4)	6 (26.1)	38 (15.4)
Illegal trader	4 (9.1)	7 (11.9)	14 (25.5)	1 (4.8)	14 (31.1)	1 (4.3)	41 (16.6)
Poor knowledge	9 (20.5)	11 (18.6)	8 (14.5)	5 (23.8)	4 (8.9)	4 (17.4)	41 (16.6)
Flaying defect	6 (13.6)	9 (15.3)	6 (10.9)	4 (19.0)	3 (6.7)	2 (8.7)	30 (12.1)
Poor infrastructure	14 (31.8)	16 (27.1)	11 (20.0)	4 (19.0)	8 (17.8)	7 (30.4)	60 (24.3)
Market access	10 (22.7)	10 (16.9)	4 (7.3)	5 (23.8)	5 (11.1)	3 (13.0)	37 (15.0)
X ² (P value)	40.93 (0.02)						

Table 2: Challenging factor, preservation methods and Use of skin and hide at the study area.

In contrast to the current study with the United Nations Industrial Development Organization [26] document explained that air drying widely used in warm climate countries, a cheap and simple method but difficult to control and often negatively affecting the quality of hides. On the other hand different reports from Ethiopia indicated household and backyard slaughtered skin and hide had not preserved at all as they sold the raw unpreserved skin and hide within 12 hours. Nonetheless, about 53.3% of middlemen (local collectors) used salting techniques [6]. Accordingly the problem of salinity is especially pronounced in arid areas, affecting the quality of water used for irrigation and livestock watering (environmental issue) [26].

In partial agreement with the findings of [6,23,27,28] and complete agreement with Wayua [29] the skin and hide producers and collectors of the current study complained absence of infrastructures, involvement of illegal traders, uneven distribution of collectors, rejection at tannery because of cuttings during slaughter and pre slaughter factors like skin diseases, ectoparasites and other traumatic wounds contributing to defects are the main challenges downgrade quality of skin and hide. 15.4% of the respondents explained uneven distribution of regular and seasonal collectors is the main factor hindering us from selling skin and hide, because taking skin or hide to neighboring PAs where collector centers available was imposing them to extra cost and time killing. The other participants (15.0%) mentioned market access as the main challenges where as 24.3% of participants complained the existing poor infrastructure is the prime factor making them not to deliver skin and hide. According to this group lack of road had enforced them not to think about transportation (vehicles) to transport their products to the existing

market which also in turn make the marketing channel unclear and illegal (Table 2).

The current study similar with and Liulseged [6,30] reports as the producers had limited information on market outlets of hides and skins. On the other hand the percentages of skin and hides brought to market (market access) in this study also lower than reports of CSA [31] who reported 77% of respondents in Gedio zone and Berhe [32] reported 69% of hides and 62.5% of skins in Tigray were utilized for sale. Such variation may be arises from unequal availability of infrastructure, lack of awareness and social norms. Our finding was in line with, Kotler [33] who reported that only 15.7% of the interviewed farmers had access to market information on eastern Tigray Atsbiwemberta worada. On the other hand, the present study finding was lower than Buljan [25] who reported that about 58% of total respondents had market access in Tigray.

Observational assessments of raw skin and hide defects along the marketing channel and grading

In the present study follow up was made on total of 136 different slaughtering sites (households, restaurant/hotels, slaughtering by sharing sites i.e., locally called “kircha” site), holiday and festival based slaughtering sites) and local collector center for two years to identify the marketing channels of skin and hides after slaughter. Attributing to this study, [6] described various agents involved in the marketing process of hides and a skin which includes producers (farmer, rural slaughter slabs and butchers’ and abattoir), middlemen, collection centers/traders and tanneries. Producers are the initial sources and

consist of individual meat consumers or farmers and butcheries and agents could be of middlemen, collection centers and tanneries. Accordingly, large volume is raw skin and hides were produced at the time of special festivals.

Formally, a marketing channel is a business structure of interdependent organizations that reach from the point of product origin to the consumer with the purpose of moving products to their final consumption destination [34]. This channel may be short or long depending on kind and quality of the product marketed, available marketing services, and prevailing social and physical environment [35]. The results of the present study revealed only 18 (13.2%) regular and seasonal skin and hide local collectors found. The regular local collectors engaged to this activity throughout the year as their occupation but they preferred hides than skins while seasonal local collectors had collected skin or hide when they get a call from trader who have direct link with tannery. On the other hand 58(42.6%) were identified as holiday based collectors who come from different areas only during the holy days. Collectors of this kind don't have known addresses through which the local skin and hide primary producers communicate them. Likewise, and Koloa [6,36] reported majority of household and backyard slaughter respondents' sell hides and skins of slaughtered animals to middlemen and collection center and the proportion of respondents selling hides and skins to informal markets with major destination to local traditional hide and skin processors are also of significant magnitude.

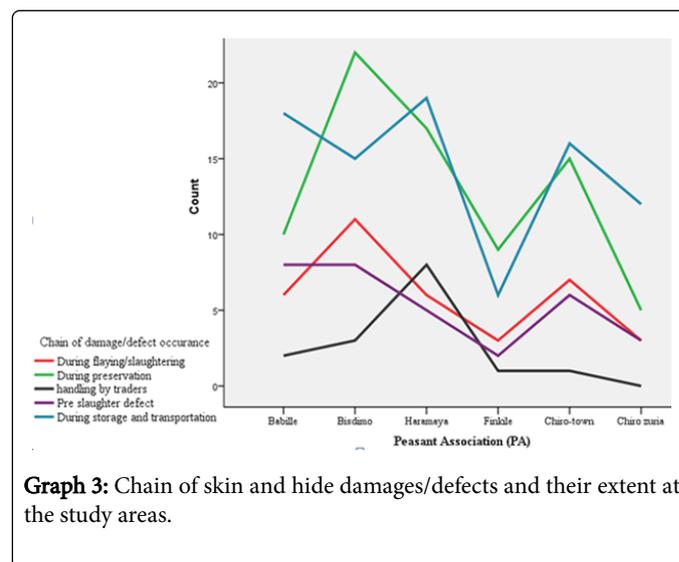
Woreda/ PAs	Parties/actors involved in skin and hide collection channels					X ² (P-Value)
	Local Collectors	Holiday Collectors	Non-collector Local People	Tannery agents/trader	Sub-total	
Babile	4 (17.4)	11 (47.8)	6 (26.1)	2 (8.7)	23 (16.9)	23.54 (0.07)
Bisdimo	0	6 (25.0)	18 (75.0)	0	24 (17.6)	
Haramaya	5 (14.7)	15 (44.1)	11 (32.4)	3 (8.8)	34 (25.0)	
Finkile	0	6 (60.0)	4 (40.0)	0	10 (7.4)	
Chiro town	7 (23.3)	13 (43.3)	8 (26.7)	2 (6.7)	30 (22.1)	
Chiro Zuria	2 (13.3)	7 (46.7)	5 (33.3)	1 (6.7)	15 (11.0)	
Total	18 (13.2)	58 (42.6)	52 (38.2)	8 (5.9)	136 (100)	

Table 3: Proportion of parties/actors involved in skin and hide collection through the marketing channels.

The study also found non-collector local people 52(38.2%) who buy skin and hide to prepare different local materials such as saddle material, bedding materials, local belt and different equipment beauty coverings. They are traditionally skilled individual who do not have legal license. The present investigation also disclosed that only 8(5.9%) tannery agent/ known traders who had been directly delivering skin and hide to the tanneries were involved in direct marketing in the two zones for the two year periods (Table 3). Similarly Asegede and [24,37] reported domestically farmers used hide and skin as a source of making household containers such as Kurbet, Dibidab, Wenber

Mechagna, Cover of materials and others. This indicates all raw slaughtered are not properly supplied to market. Farmers' sell their products either to middlemen or to collection centers. This constitutes the primary market. Middlemen and primary collection centers in turn sell hide and skins collected from the primary sources to either tanneries or second nearby larger collection centers/ secondary market [6]. The current study also tried to identify the source of skin and hide defects/damages that lead to rejection along the marketing channel. In collection to this majority of the defects resulting skin and hide rejection were occurred during preservation and followed by the storage and transportation related damages. On the other hand skin and hide handling techniques practiced by traders produce the least defect (Graph 3).

In addition to preslaughter damages (Ectoparasites, skin diseases and etc.), defects during slaughter or inappropriate handling or poor preservation techniques are other factors that exacerbate the condition [13]. On the other hand in Ethiopia, since over 90-95% of skins and hides are collected from animals slaughtered at household and PA levels and thus post mortem defects are highly expected [5]. The post-mortem defects comprise of bruise gouge marks, flay cut, bad bleeding, putrefaction, hair slip and beetle damages. While, Bacteria, viruses and fungi are also play role in development of various types of skin and hide lesion in ruminant skin diseases [4].



Graph 3: Chain of skin and hide damages/defects and their extent at the study areas.

Following the chain from the primary producer to tannery, a total of 247 wet skins and hides (62 hides, 86 sheep and 99 goat skins) were examined for wet blue grading at Mojo tannery and only 3.2% (n=62) hides, 5.8% (n=86 sheep) skins and 5.1% (n=99) goats' skins were fit for export standard (falling in the grade 1 to 4). On the other hand, 35.5% hides, 43.0% sheep skins and 35.4% goats' skins were found in the class of higher grades for local market. However, 29%, 25.6% and 27.3% hides, sheep and goats' skins, respectively, were totally rejected (Table 4).

Species	No of SH examined	Export level Graded for Local market only				X ² (P-value)
		Grade 1-4	High grade	Medium	Rejected	
Cattle	62	2 (3.2)	22 (35.5)	20 (32.3)	18 (29.0)	2.37 (0.88)

Sheep	86	5 (5.8)	37 (43.0)	22 (25.6)	22 (25.6)	
Goat	99	5 (5.1)	35 (35.4)	32 (32.3)	27 (27.3)	
Total	247	12 (4.9)	94 (38.1)	74 (30.0)	67 (27.1)	247 (100)

Table 4: Wet blue skin and hide examination at tannery level.

Contradicting this result Amde [28] found that 11.5% of sheep and goats' skin taken from Asella area to tannery ranks grade 1-4. The present study result also revealed high graded skin and hides were lower than the report of [38] reports, that found 10% to 15% of sheep and goats skin ranks top grade with the others lower grade. Such variation may be due to the distance between the study areas and the tannery plant, the near to the tannery the more knowledge and awareness in good handling practices of skin and hide.

On the other hand, in present study total rejection rate of skin and hide at Modjo tannery 27.1% which is lower than the finding of Amde [28], who reported 50% skin rejection from Arsi zone. In contrast to our study Gebramichael [11], reported 69.8% falls in low and poor in low i.e., grade 5-7 (higher grade for local market and poor in lower grade/ medium level for local market) while 11.1% in higher grade 1-4 of export standard.

Conclusion and Recommendations

Raw skin and hide production in present study area faced a serious challenge since skin and hide were downgraded and rejected as a result of various ante-mortem and post-mortem defects contributed by skin diseases, slaughtering defect and improper practices of curing, collection, transportation and storage. Slaughter and flaying operations of cattle, sheep and goats are also conducted in many cases traditionally and by unskilled personals. Market access was only available around towns with the absence of market competent. Skin and hide collectors had also no facilities for preservation and storage. In the present study area illegal traders and knowledge gap in handling practices were also identified as challenges for skin and hide marketing.

Therefore, effective extension system approach in community awareness creation and building formal marketing link amongst producer to collector, trader and tannery should be practiced. Facilities like shade for storage, collection and transportation by collectors should be supported by both government and non-government organizations. Farther studies also need to be conducted on marketing channel and factoring downgrading skin and hide at present study areas to address the current challenges.

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