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ASSESSMENT OF QUALITY AND MARKETING OF HIDE AND SKIN IN
ADAMITULU JIDOKOMBOLCHA AND BORA WOREDA, IN EAST SHEWA
ZONE OF OROMIA REGIONAL STATE, ETHIOPIA

MSc Thesis



BY

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Animal Production Studies

June, 2015

Bishoftu, Ethiopia

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ADAMITULU JIDOKOMBOLCHA AND BORA WOREDA IN EAST SHEWA ZONE
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A Thesis submitted to the College of Veterinary Medicine and Agriculture of Addis
Ababa University in partial fulfillment of the requirements for the degree of Master of
Science in Tropical Animal Production and Health

By

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June, 2015

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As members of the Examining Board of the final MSc open defense, we certify that we have read and evaluated the Thesis prepared by: **Alemnesh Belete Zenaw** titled: **Assessment of Quality and Marketing of Hide and Skin in AdamiTulu Jidokombolcha and Bora Woreda in East Shewa Zone of Oromia Regional State, Ethiopia** and recommend that it be accepted as fulfilling the thesis requirement for the degree of: Masters of Science in **Tropical Animal production and health.**

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STATEMENT OF AUTHOR

First, I declare that this thesis is my *bonafide* work and that all sources of material used for this thesis have been duly acknowledged. This thesis has been submitted in partial fulfillment of the requirements for an advanced (MSc) degree at Addis Ababa University, College of Veterinary Medicine and Agriculture and is deposited at the University/College library to be made available to borrowers under rules of the Library. I solemnly declare that this thesis is not submitted to any other institution anywhere for the award of any academic degree, diploma, or certificate.

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LIST OF ABBREVIATIONS

CNFA	Citizens Network for Foreign Affairs
COMESA	Common Market for Eastern and Southern Africa
CSA	Central Statics Authority
FAO	Food Agriculture Organization
GDP	Gross Domestic Product
H&S	Hides and Skins
ILCA	International Livestock Center for Africa
ILRI	International Livestock Research Institute
Kg	Kilogram
LRRD	Livestock Research for Rural Development
MEDaC	Ministry of Agriculture and Economic Development
MOA	Ministry of Agriculture
MOARD	Ministry of Agriculture and Rural Development
MOFED	Ministry of Finance and Economic Development
MOTI	Ministry of Trade and Industry
QSAE	Quality and Standards Authority of Ethiopia
UNIDO	United Nation Industrial Development Organization
USD	United State Dollar

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ABSTRACT

The current study was conducted from December to March 2015 with the objective of determining the major causes of defects and quality characteristics of skin and hides and assesses marketing of the raw materials in Adami Tulu-Jido Kombolcha and Bora woredas. A total of 768, (382 sheep and 220 goat skins and 76 cattle hides) samples were randomly selected and visually examined for defects at collection centers. Then, 20 apparently health and 20 apparently defective goat skins were selected purposively, salted and sent to tannery for defect analysis and grading at wet blue stage and for physico-chemical laboratory analysis at crust stage of processing. A questionnaire survey was also done with 200 respondents to assess the marketing situation of hide and skins in the study areas. In this case, household producers, butchers, middlemen and collection center owners were interviewed. The study showed that all the skin and hides examined were found to have one or more types of defects. Major defects responsible for the decline in quality of skin and hide were cockle (36.6-68.1 %), flay defect (50.0-55.9%), scratch (29.5-60.7%), scar (19.3-26.2%) and putrefaction (17.5-30%). Brand marks were also detected mainly in 9.6% of cattle hide. The proportions of scratch, flay defect and cockle were higher in goat skin, sheep skin and cattle hide respectively ($P < 0.05$). Both defective and apparently normal goat skins after tanning to wet blue stage have demonstrated different types of defects. Prevalence of cockle, scratch, putrefaction and pox lesion was increased after processing defective skins. None of the skins considered normal were free of defects. However, the appearance of defects such as cockle, scratch, putrefaction and pox lesion was higher in defective than in those considered normal ($P < 0.05$). Grading at wet blue stage revealed that majority of skins in both groups earned grades 3-5; there was no grade one. On the other hand, physico-chemical examination (tensile strength, % elongation, tear load, moisture and fat content etc) as a reflection of the natural characteristics of goat skin showed that both groups, classified defective and normal, had within standard or better performance compared to the Ethiopian Standard. Marketing of

hide and skins was also evaluated. It was observed that marketing was accomplished at four levels: producer, middlemen, collection center and tannery. Prices increase as we go from producers to tannery. Producers selling to collection centers earn better price offer. Major factors affecting marketing of hide and skins include production problems such as diseases and flaying and handling defects as well as market problems such as lack of competitive market, price fluctuation and lack of price information. It can be conclude that if the major defects are significantly reduced and access to market and market information is improved, raw hides and skins in the study areas, as reflected from goat skin analysis, have outstanding natural characteristics that could make them qualify for better grades in the market.

Key words: *Adami Tulu, Bora, Defects, Hide and Skins, Marketing, Physico-Chemical Characteristics*

1. INTRODUCTION

In Ethiopia Agricultural development is considered a priority by the Government for stimulating overall economic growth, reducing poverty and achieving food security. The agricultural sector of Ethiopia accounts for about 42% of GDP, more than 80% of export, and 85% of employment (MOFED, 2011). Within agriculture, the Livestock subsector provides an opportunity for farther development. The sheer size of the national livestock herd, being one of the targets in Africa, makes it recourse with the potential to contribute significantly to national development, including to poverty reduction. The total cattle population Ethiopia is about 53 million. Moreover, about 24.2 million sheep and 22.6 million goats are estimated to also be found in the country which is one of the largest and most diverse in Africa (CSA, 2009).

These livestock subsector is also major contribution in to the overall economy. The livestock sector contributes 19% of GDP and 16-19% of the foreign exchange earnings of the country. It contributes some 35% of Agricultural GDP (or 45% if indirect contributions are taken in to account). With the rapidly growing population, increasing urbanization, and rising incomes, domestic demand for meat, milk and eggs is expected to increase significantly for the foreseeable future. Furthermore, the country's foreign exchange from livestock product is increase, especially for red meat to gulf and within Africa, as well as leather and other livestock product to Europe (MOA, 2012).

The livestock production system is virtually traditional and contributes to both subsistence and cash generation .They are only sell or slaughtered animals at an advanced age, or in case of urgent need (Ehui *et al.*, 2000; Ayalew *et al.*, 2003). Self-sufficiency in food production, increase in rural income and foreign currency earning of the country through improving the quality and quantity of export items are among the main objectives of the current agricultural development polices of Ethiopia. Cattle, sheep and goats are important source of income for agricultural community and are also one of Ethiopia's major sources of foreign currency through exportation of live animals, meat, hide and skin (Dessie *et al.*, 2010).

Hide from cattle and Skins from goats and sheep are important economic products contributing for the largest share to the total and agricultural export commodities (Food and Agriculture Organization (FAO, 2005) followed by live animals (Ayele *et al.*, 2003). The availability of hides and skins through slaughtering or death of livestock is particular importance to the leather industry. Hides and skins has been one of the country's top foreign currency earners. Although today it ranks 4th next to coffee, chat and oilseed export, in 1980s and 1990s it used to be second foreign currency earner. In 2011 Ethiopia earned 139.28 million USD from export of finished leather, shoes, garments and gloves to foreign country's (CSA, 2011).

Based on annual off take rates of 7.12% for cattle, 31.11% for sheep and 35.37% for goats, the potential production is estimated at 3.7 million cattle hides, 8.7 million sheep skins and 8.1 million goat skins in 2011/2012 (FAO ,2011). Regarding hide and skin production, about 90-95 per cent is supplied from urban and rural backyard while 5-10 per cent is derived from some municipal slaughter house located at main urban center and the export abattoirs (Ahmed, 2000). The wide dispersion of the slaughtering points across the country, along with the lack of proper slaughtering amenities has a negative impact on the volume and quality of hides and skins entering the formal market chain. As a result, all available raw materials are not recovered; a considerable proportion is wasted before reaching the tanneries, the final consumers of the raw hides and skins (MEDaC, 1999).

Hides and skins contribute much to the export earnings from the livestock sector. In addition, it has a large contribution to the leather industry in the country. Ethiopia has been exporting hides and skins in the past 100 years (Girma, 2003). Trade in hides, skins, leather and leather manufactures have been in a great growth at an average of about 12% over the last 30 years, reaching to around US\$ 53.8 billion in early 2000. Commodity trade patterns have changed during a period between 1999 and 2008 and practical methods for evaluation and classification of skin are necessary (FAO, 2010). The current utilization of hides and skins in Ethiopia is estimated to be 48% for cattle, 75% for goat and 97% for sheep with expected off take rate of 33, 35 and 7% for sheep, goats and

cattle, respectively (Mahmud, 2000). Though hides and skins are important source of export income, its contribution to the national economy may be far below the expected potential. This is because the quality of hides and skins has deteriorated due to different factors. The damage may be due to skin parasites that affect the live animal, related scratch, husbandry practices on the farm or in transport of the live animal (scratches, bruising, or dirt contamination); it may be due to damage during slaughter or removal of the hide; or it may be caused by inappropriate handling or inadequate preservation techniques (Mwinyihija 2010; 2011). Besides management practices and processing techniques, skin quality is also affected by the genotype (Alberto, 2002; Costa et al., 2005; Tsegay *et al.*, 2012). Estimates from tanneries have put the percentage of reject to be as high as 50 to 60%. Most types of damage can be reduced or avoided altogether by better management of the animal or the hide and skin (Abdi, 2000).

Skin and hide quality is usually assessed by international standards of physico- chemical tests, which are intended to guarantee leather quality and uniformity (Tsegay *et al.*, 2012). Oromia has the largest livestock resources base in Ethiopia. Livestock plays a significant role in the economy of the Region, they provide food (milk, meat, egg, hides and skins, etc), draught power for cultivation, serve as a means of transportation and as a saving. They are also kept for prestige as an indication of social status and wealth in the society (CSA, 2006/7). Cattle, sheep, goats, donkey, and camels are the major types of animals reared and there are about 18.8 million tropical livestock units (TLU) in the region. Oromia accounts for about 45.7 percent of the cattle, 39.3 percent of the sheep and 31.7 percent of the goats stock of the country.

The proportion of horses, donkeys, mules and camels share of the Region from the country's total is 63.2, 45.8, 49.3 and 21.3 percent respectively. Similarly, hides and skins are important economic component of the region, which contributes significant amount to the regional economy. However, the hide and skin in the sub-sector is constrained by various structural, production, information exchange, and quality problems, as well as financial constraints. East Showa is among the potential zones of the region in livestock production and consequently in the supply of hide and skins to the

local markets. In this regards, very little information is available on hide and skin quality problems and marketing of the raw materials in Adami Tulu-Jido Kombolcha and Bora Woredas of East Showa Zone.

The general objective of the study is to assess the quality and marketing of hide and skins and associated constraints in Adami Tulu -Jidokombolcha and Bora woredas.

Specific Objectives

- To assess the quality of hide and skin (pre- and post-slaughter defects, physico-chemical analysis
- To describe hide and skin market chain ,factors affecting marketing of the raw products in two woreda

2. LITERATURE REVIEW

2.1. Hide and Skin Definition

Hides and skins are broadly defined as the external integuments of large animals, while skins are the outer coverings of small stock (goats and sheep). The best sources of hides and skins from domesticated animals are cattle hides and sheep-goat skins. However, hides and skins may also be obtained from other species of domesticated and non domesticated animals (hides from, buffalo, horse, camel, elephant etc) and (skins from, pig, impala, rabbit, mink, snake, frog, ostrich, shark etc) (FAO, 1995).

These hides and skins are the end products of animal production, as an end product although more correctly they are by-products; they are important and valuable resources. In the developing world they are almost never exploited to anything like their full potential. Hides and skins are often intrinsically and up discarded or wasted because of ignorance or misinformation (FAO, 2009).

2.2. Development of the Hides and Skins Sector in Ethiopia

In Ethiopia, annual per capita consumption of food animal origin, particularly meat is very low (7.4 kg). However, this is assumed to grow with the improvement in income per head and population growth, leading to increased slaughter of animals and hides and skin production (Girma, 2003). Hides and skins are the basic raw material for the production of leather for footwear, clothing, upholstery, industrial uses, etc. A good proportion of this raw material comes from the individual households, rural slaughter slabs; municipal slaughter houses and mechanized, modern abattoirs) (FAO, 1998). In Ethiopia off-take rate is estimated at about 8% for cattle, one of the lowest in Africa in terms of proportion to the livestock population. This amounts to between 2.2 and 2.8 million head of cattle

per year (FAO, 1998). Ethiopia has been exporting more of hides and skins relative to its meat and live animals export. The channels for the collection of hides and skins to the tanneries are relatively well established but need significant improvements to reduce damages caused by thorns, ectoparasitic diseases, poor flaying and storage methods. Whereas achieving significant improvements on the former two may not be easy given the country's under developed animal health delivery system and livestock grazing habits, technical improvements on the latter two are within reach given some commitment (Yacob, 2002). Probably the best-known types of mammalian hides used by the tanning industry are those provided by cattle. Based on the level of recorded slaughtering for meat production, cattle would have provided about 28% of the total number of all hides and skins. On the basis of weight, cattle hides may have contributed as much as 90% of the tanning industry's raw materials from conventional sources (Darge, 1995).

Sheep skins: are important sources of raw materials for the tanning industry, providing 48% of the pieces in 1990 or 7% of the weight of raw material from conventional sources. They are considerably smaller than hides, with medium-sized skins. Goat skins: are the third principal sources of raw materials for the tanning industry, providing 24% of the pieces in 1990, or 3% of the weight. They are about the same size as sheep skins, but slightly lighter at 2-5 kg and thinner at 1-2 mm. They are generally considered by tanners to be one of the best materials for leather manufacture. The papillary layer constitutes about 50% of the thickness of the dermis, but it does not seriously weaken the skin. Ethiopian hide and skin have good reputations in the international leather market for their unique natural substance of fitness, cleanness and compactness of texture, thickness, flexibility and strength (Leach, 1995).

The cattle hides, identified as “Zebu type”, are popular for their fine grain pattern and fiber structure that are well suited for the production of quality upper leather. The highland sheepskin known as “hair sheep/selale type” is considered to be the world finest and have a highly compacted texture. They are excellent raw material for high quality leather for dresses, gloves, sports gloves and other garments. In the history of world leather market, the Ethiopian hides and skins have proved special suitability for the

production of different leather products and so that they have won international reputation (Darge, 1995). Goatskins from the highlands are categorized as “Bati-genuine” and those from the lowlands as “Bati-type” in the international market. “Bati-genuine” is associated with highest quality class of goat skins in the world. The particular characteristics of Ethiopian bati-genuine goatskins are their thicker, highly flexible and clean inner surface and are known world-wide for being excellent raw material for producing high quality suede leather (Ahmed, 2000).

2. 3. Production and Utilization of Hides and Skins in Ethiopia

There are a number of ways hides and skins are produced in Ethiopia individual households, rural slaughter slabs; municipal slaughter houses and mechanized, modern abattoirs. Individual households residing in kebeles across Ethiopia produce most of the country’s hides and skins, often slaughtering their animals in their backyard (Ethiopia Livestock Master Plan, 2007). A considerable number of the raw material is derived also from slaughter slabs constructed either by local communities, regional governments or hide and skin development projects municipal slaughterhouses, local and export abattoirs and meat and meat products processing plants are other sources of hide and skin (Ahmed, 2000).

The availability of hides and skins depends on the number of cattle slaughtered. Both in beef and dairy businesses, hides and skins are recovered and taken to firms for further processing (Ahmed, 2000). Despite the prevalence of periodic drought, many killer livestock diseases and feed shortages that have adverse effects on the population of livestock, the annual livestock population and hide and skin data reveal a constant increment (MEDaC, 1999). In Ethiopia, supply of raw hides & skins is entirely from domestic source and are largely processed at various stages for export purpose and very little finished leather for domestic consumption. However, the local tanning industries have rather suffered from both poor quality and limited supply of the raw material, especially skins. The net supply of raw hides & skins appear to be far below the aggregate demand of the existing tanneries (CSA, 2000). The major suppliers of sheep

skins are Amhara, Oromia and the Southern Nations Nationalities and Peoples Regions (SNNPR) accounting for 34.5, 32.9 and 16.6%, respectively, of the total sheepskins supplied to tanneries. On the other hand 45.4, 26.4, 11.7 and 11.6% of the total goatskins supplied to tanneries are collected from Amhara, Oromia, Tigray and SNNPR, respectively. The other region's contribution is in the range of 0.02 to 2% (MOA, 1997). The estimated off-take rate for sheep in Ethiopia is 40%; and estimated the off-take rate for goats and cattle, which is 37% and 6.5%, respectively, (CSA, 2000).

2.4. Hides and Skins Defects and Their Types

Skins commonly exhibit defects caused by a variety of factors. Defects originating while the animals are alive are called ante-mortem defects while those originating after the death of the animal are called postmortem defects. While some defects are common to all animals, some are specific to some species. The environment (where the animals live) and husbandry practices (farming, transportation etc) contribute to pre-slaughter defects and consequent reduction in the quality of raw materials (Zenaw, 2012 and Mekonnen, 2012). Similarly post slaughter risk areas include (during animal slaughtering, hide and skin transportation, storage and preservation).

The consequences of all such defects are that every tannery (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 (Bultri, 2012 and Zemene and Addis, 2012). As many as one-quarter to one third of all skins processed at tanneries have various defects and are unsuitable for export purposes (Kassa, 1998). Up to 65% of these defects occur in the pre-slaughter stage of production while the animals are alive.

2.4.1. Pre-slaughter defects

The pre-slaughter operations that affect the quality of the hides and skins available to the tanning industry are principally the result of the quality of the husbandry applied by those who looked after the animals-herders, farmers, ranchers, feedlot staff, veterinarians, hides

and skins merchants and transport operators. In some circumstances, domesticated animals may receive almost no attention throughout their lives. These are the animals left to graze or forage (sometimes in open grassland), which may only be handled immediately before dispatch to the abattoir. By way of contrast, some dairy animals kept under intensive systems may be subject to almost continuous scrutiny. In between these two extremes there exist large ranges of animals' production systems, which can present more or less of a hazard to the quality of the animal's hide or skin (Leach, 1995). In many livestock production systems, disease control is a major aspect of animal's husbandry. Any fatal disease that leads to the condemnation and destruction of the animal, or a serious disease that affects the productivity of the herd will have an adverse effect on the supply of hides and skins (Leach, 1995).

The final part of the pre-slaughter operations involves the supply and transportation of the animal to the market and ultimately the butchery. Special attention is required at this stage since any damage to the animal will not have time to heal before the animal is slaughtered, so any defect will remain on the hide or skins as an open wound. The range of different problems that can occur at this stage is extensive, and many others associated with improper transportation (Leach, 1995). Pre-mortem defects include: skin disease, Scratches, brand marks, scars, old age defects and poor substances (Kidanu, 2001; Kassa, 1998) that occur in the pre-slaughter stage of production while the animals are alive.

Considerably large portions of these pre-slaughter defects are directly related to parasitic and /or to secondary self-inflicted damages (Ermias, 2000; Haffeze, 2001). The diseases that affect skin quality include: bacterial (Dermatophilosis); viral (pox, warts and lumpy skin); parasitic diseases (lice, keds, mange, ticks) (Kassa, 2006). Branding defects include those induced during change of ownership, zone branding and identifications in feedlots. This implies that there is need to revise the branding practice as it encourages multiple branding which lowers the quality of hides (Koloka, 2010). Similarly, there are also damages resulting from horn marks, whip lashes and thorny plants.

2.4.2. Post-slaughter defects

Post-mortem defects comprise of inadequate bleeding, gouge marks, flay cut, putrefaction, hair slip and beetle damages, etc. (Kidanu, 2001) which are directly related to transportation, preservation and storage of the materials and hence are the product of poor management and treatment (Bultri, 2012 and Zemene and Addis, 2012). Flay defects are very common in Ethiopia because of lack of knowledge and experience of people who perform the job. The type of flaying equipment also plays a major role in the production of good quality skins and hides. Almost all slaughter facilities except some modern abattoirs use hand flaying. As a result, flay cuts and gouges are a common feature on hides and skins (Koloka, 2010).

Other defects are due to unnecessary use of a knife, insecure position of the carcass and bad lighting. If the ripping line is not properly cut, the final shape will not be symmetrical and may affect the usefulness of the skin for commercial production of quality leather, ultimately affecting the value of the leather itself. Improper fleshing allows fatty tissues to remain on the skin, resulting in poor curing both by salting and air drying. Inadequate bleeding causes rapid development of bacteria along the blood vessels as a result of bacterial spread from the blood vessels, skin fibers in the vicinity are destroyed and open channels following the course of the blood vessels are formed through the skin surface.

These defects show up in the final stage as a groove on the grain surface following the patterns of the damaged blood vessels (Kassa, 2005). Gouge marks are knife damages to skin during flaying taking out scooped portions of corium. Inefficient transportation may cause delays in arrival to tanneries or preservation centers as a result of which green or salted hides and skins deteriorate in quality. Poor handling during loading and unloading may damage quality of hides and skins (Kassa, 2005).

2.5. Hide and skin Quality

Quality is the most important factors in the improvement of skin production as a whole system of collection, which is far from efficient or complete (UNIDO, 2004). The quality of hides and skins for production of different types of leather is determined by certain characteristics of the raw material, These are, physico-chemical characteristics (thickness and evenness of the thickness over the surface, the weight/mass, the size, elasticity etc) and the presence of defects.

2.5. 1. Size, width and thickness

The size of the skin is considered and hence graded into extra small, small, medium, large and extra large. The squared method was used to measure the size (surface area) of each skin. The number of hides may be confusing since the sizes of most common hides and skins differ considerably. The weight of a hide or skin is determined by the structure of the collagen fibbers of the skin. Physico-chemical qualities of skin are tensile strength, percentage elongation at break, tear load and distension, thickness. Venire caliper is used to measure the width and thickness of each test sample to the nearest 0.1 mm at areas between the grain side and the flesh side (ISO, 2002).

2.5. 2. Tensile strength

The tensile strength (T_n^2) is measured (kg force/mm) using tensile testing machine (model 4001 intone) with cell force of 100 kg (IOS, 2002). In order to measure tensile strength grain crack is primarily considered as a measure of the strength of the grain layer within the tested material as physical quality parameter (Craig *et al.*, 1987). According to the standards for the leather cloth, the value of tensile strength must be about 150 kgf cm² (British Standards, 1984). For the tensile strength of goat skin ranges from 203 to 255 kgfcm² and 153 to 204 kgfcm² for the parallel and perpendicular samples, respectively

(Sivasubramaniana *et al.*, 2008). For cattle hide these amounts were 255 to 306 kgfcm² and 204 to 255 kgf cm, respectively (Sivasubramaniana *et al.*, 2008).

2.5. 3. Elasticity and flexibility

The elongation (maximum stretching without breaking) of leather can be controlled (15–73%) by selecting the tanning and fat liquoring processes. Leather also has excellent flexibility over wide temperature and moisture range, making the product suitable for harsh environments (Gordon, 1995).

2.6. Market and Marketing Concepts

The concept of exchange and relationships lead to the concept of market. It is the set of the actual and potential buyers of a product (Kotler and Armstong, 2003). Conceptually, however, a market can be visualized as a process in which ownership of goods is transferred from sellers to buyers who may be final consumers or intermediaries. Therefore, markets involve sales locations, sellers, buyers, and transactions. Marketing is managing markets to bring about profitable exchange relationships by creating value and satisfying needs and wants. “Marketing includes all activities from the farm gate to the final consumer (Kotler and Armstrong, 2003). Definition of marketing is widely known as “the 21 century definition of marketing” which runs as follows a social and managerial process by which individuals and groups obtain what they need and want through creating and exchanging products and values with others (Kotler, 2003).

2.4.1. Marketing system

The concept of marketing system includes both physical distribution of economic input and products and the mechanism of process or coordinating production and distribution (Andargachew, 1990). In broad terms, marketing system may be defined as the totality of product channels, market participants and business activities involved in the physical and economic transfer of goods and services from producers to consumers. Marketing system

operates through a set of intermediaries performing useful commercial functions in chain formations all the way from the producer to the final consumers (Islam *et al.*, 2001).

Three local market tiers are present in the hides, skins and leather subsector;

Primary market:- through local markets in the study area by livestock traders, butchers and local buying groups.

Secondary markets: – Main collection centre's both in the study area and high potential areas. This is characterized by hides and skins traders.

Tertiary market: – this is the highest market level possibly the terminal market locally. This is characterized by exporters, tanners and major buyers in urbanized localities (Mwinyikion *et al.*, 2010).

2.4.2. Marketing chain

Formally, marketing chain is 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 (Kotler and Armstrong, 2003). This knowledge is acquired by study the participants in the process, i.e. those who perform physical marketing functions in order to obtain economic benefits (Getachew, 2002). This chain may be short or long depending on kind and quality of the product marketed, available marketing services, and prevailing social and physical environment (Islam *et al.*, 2001). The marketing of hide and skins starts at the producer/consumer level and passes through a chain of middlemen until it reaches the tanneries (Ahmed, 2000).

The marketing chain is principal from primary producer (rural farmer and pastoralist) to rural markets; to small dealers and agents/collectors; to town traders and shed owners (where hides and skins are frame-dried and/or wet-salted); to the big traders and finally to tanneries (Zewdu, 1998; Ahmed, 2000). The tanneries can be supplied directly from the slaughter premises, regional big traders. The tanneries process the hide and skin received from their suppliers either in the green (fresh), air-dried or wet salted states to semi-finished or finished stages for both local and exports markets (Ahmed, 2000).

2.4.4. Market structure

Market structure depicts the institutional environment among others in which transactions take place, which influences competition and pricing is considered to be fixed in the short run for actor in the marketing channels. Market structure is defined as characteristics of the organization of a market, which seem to influence strategically the nature of the competition and pricing within the market. Elements of market structure include: type of intermediaries, type of marketing channels and type of markets, number of actors, instruments quality standards, physical market infrastructure and regulation of entry and exit (Scott, 1995).

2.4.5. Marketing conduct

Market conduct refers to the patterns of behavior that firms follow in adopting or adjusting to the markets in which they sell or buy. Such a definition implies the analysis of human behavior patterns that are not readily definitely, obtainable, or quantifiable. In other words, conduct focuses on trader's behavior with respect to various aspects of distinctive elements characterizing the functioning of agricultural commodity market. It is the patterns of behavior which enterprises follow in adapting or adjusting to the market in which they sell or buy, or in other words, the strategies of the actors operating in the market. Elements of marketing conduct include: buying, selling, transport, storage, information and finance.

2.7. Marketing of Hides and Skins in Ethiopia

Market globalization poses a considerable challenge to farmers and those living in rural areas in developing countries, where inadequate infrastructure and limited access to information and technology increase both production and transaction costs. So, how can producers compete in such markets, which are more and more demanding with regard to product quality and timely delivery should be considered (Bernet *et al*, 2006). The CNFA

strategy is focused and flexible which is born out of rich experience in Eurasia, the Middle East, and Africa, the strategy is designed to address the multiple productions, value adding, and marketing challenges faced by developing agriculture. Typically working at three systemically linked levels of the agricultural economy (markets, enterprises, and farmers), CNFA strengthens the linkages between producers and buyers, enabling producers to access new technologies, improve quality and ultimately, to expand sales and incomes (CNFA, 2003). Before CNFA undertakes certain projects, the economists and business specialists conduct thorough analyses of enterprises in a market chain, weak or broken linkages between those enterprises, and the unique competitive advantages of each market chain in regional markets.

As a result, the program is more targeted – designed to address specific market chain weaknesses (CNFA, 2003). Trade in hides and skins, semi-processed, tanned leather goods is a lucrative business. This is particularly the case for some developing countries where the dynamism of the sector has led to a move up the value-added chain and strong market positions. As a result, developing countries hold a 45% share of world trade in leather manufactures. Many have substantially increased their share of world footwear production in relation to developed countries (Rienstra, 2004). Exports of hides and skins have fallen in recent years to below 4%, yet leather is ranked very high as an export commodity in several African countries.

The countries 'tanning capacity has fallen from 9.2% to 6.8%. At the same time, the livestock population has jumped about 25% over the last decade, faster than the world trend (Rienstra, 2004). The livelihood of the smallholders is highly dependent on the cash income derived from livestock and livestock products. Alleviating constraints to marketing, improving market information and upgrading marketing infrastructures will potentially increase the welfare of smallholder producers and urban consumers and improve the national balance of payments. The more farmers are aware of the market demand and price, the higher will be their bargaining power that could improve their income through getting a larger share of the consumer spending. Market infrastructural and tannery and leather industries find themselves in precarious situations in all the three

countries. Firstly, there are more tanneries than the locally available volume of rawhides and skins. Cheap and subsidized imports of leather products and articles are also out competing the local leather processing industries and forcing them to close down in Kenya, Ethiopia and Sudan. The tannery industry is fraught with cash-flow problem. It is difficult to envisage how these industries can survive for long unless the respective governments take some critical measures to safeguard them from total collapse (Yacob, 2002). Leather is a leading export item for many African countries. However, the gap between resources and production is wide, Reducing the gap is critical in this important sector; this is strategic for economic and industrial development.

By boosting exports, the entire continent stands to benefit, because leather is a by-product of the meat industry, the supply chain begins with animal husbandry, the lifeblood of many rural communities (Rienstra, 2004). Institutional set-ups will improve the access of producers to potential markets whereby they could supply more volumes with higher share of the end market price (Ayele *et al*, 2003). Current knowledge on livestock market structure, performance and prices is poor and inadequate for designing policies and institutions to overcome perceived problems in the domestic and export marketing systems (Ayele *et al.*, 2003). Livestock and livestock products are the major foreign exchange earners, only second to coffee, with hides and skins contributing the most (Yacob, 2002).

The share of live animal exports in total livestock and livestock products export earnings have declined in recent years. Livestock prices drop down during droughts and peak up during holidays (Yacob, 2002). Hides, skins, leather and leather products are the most widely traded commodities in the world with their total export value of US\$ 44 billion. These products combined rank in important exportable agricultural commodities like, meat, rubber, cotton, coffee, tea, rice and tobacco. The value takes 41% of the combined export values of these commodities (FAO, 2001). Skins and hides exports increased during this period while meat exports remained relatively constant (Zewdu, 1995). Export of finished products is negligible. Traditional tanners also absorb substantial quantities of hides and skins for processing and manufacture of traditional household articles including

farm implements, furniture, saddles and traditional musical instruments (Girma, 2003). In Ethiopia, hides and skins are traded in accordance with international free market conditions in terms of price. But this system works to the advantage of the big traders and tanneries that have the opportunity and capacity to follow world market price trends and fluctuations; the rural farmer /primary producer lacks this opportunity. Traders supply about 70% of the hides and 90% of the sheep and goatskins to the industry (UNIDO and MoTI, 2004). The marketing chain for the hides and skins trade is principally from the primary producer (rural farmer) to rural markets, to small dealers and agents-collectors, to town traders and shed owners (where the hides and skins are frame-dried and /wet salted), to the big traders in Addis Ababa (the central market) and finally to the tanneries.

The hides and skins produced in butcheries and abattoirs are auctioned to big traders and to tanneries, both public and private (UNIDO and MoTI, 2004). In general, in different cross-border trade outlets, prices do not move in the same direction, indicating some sort of market failure. Thus, there are no established spatial price differences (price ratios) that can be linked to this trade pattern. And there is no market integration, making it difficult to prescribe policy interventions to combat this trade (Tegegne *et al.*, 2001). The advantage of applying the value chain permits the development of an integrated approach to the analysis of problems and constraints throughout an industry, thus leading to the identification of solutions to problems within specific components that will positively affect other components, and the chain as a whole (UNIDO and MoTI, 2004).

The leather value chain begins with animal husbandry, the source of its raw materials. It then has four stages - three processing stages and the marketing, composed of several elements that are critical to the functioning of the chain: marketing of hides and skins, the basic raw material, and the marketing of intermediate and of final products. The leather value chain, with all the inputs, policies and support system that it requires, is clearly a high complex system, where problems and constraints and the search for their solutions are interrelated (UNIDO and MoTI, 2004). The market chain is stretched in space and time starting from the point of slaughter to the markets where end products are supplied. The commodity passes through different hands with or without changing its form (Girma,

2003). The market is generally very wide with long channel in which different market forces with different trading capacities are involved. These are primary producers, collectors, big suppliers, butchery's and abattoirs, traditional tanners, tanning industries and transport enterprises (Girma, 2003). Hides and skins as a livestock products are one of the different animal products and by - products offered to the central as well as foreign market to earn foreign currency (Adugna, 2004). The marketing of hide and skin starts at the producer/consumer level and passes through a chain of middlemen until it reaches the tanneries.

The market chain for raw hide and skin consists of the primary producers/consumers, who are the initial sources (individual meat consumers, rural slaughter slabs, municipal slaughter houses, abattoirs, and meat processing plants), agents of traders, collectors, local tanners, regional medium/small traders, regional/ big traders and tanneries. The individual consumers who kill animals in their backyard sell the hide and skin either to agents, collectors, or directly to regional small/medium traders (Adugna, 2004). After preservation by air-drying or wet salting, the hide and skin are passed on to big traders and to the tanneries.

2.8. Constraints of Hides and Skins Marketing in Ethiopia

The main constraints adversely affecting the production and marketing of hides and skins are defect, the utilization of HS for traditional household items, the existence of cross border illicit trade and misuse of the raw material due to lack of awareness, result in a low recovery rate and ultimately shortages of raw HS in the central market (MEDaC, 1999). Similarly, the other constraints of hides and skins marketing faced were reflections of the economic policy which were characterized by socialist-oriented development and centralized planning system: nationalization of major industries, financial institutions, allocation of quotas, fixing prices, legal monopoly of corporations, restriction of trade movement and the like (Girma, 2002).

Apart from the problems that stemmed from the system, the main constraints in the marketing of hides and skins included an inadequate network of primary buyers, lack of facilities for slaughtering, preservation, storage and transportation, 'lack of incentives for improvement' and limited effectiveness of government extension service and other man-made and natural damage inflicted on the raw hides and skins downgrades quality (Ahmed, 2000). The number of slaughterhouses in the country is very limited. Thus, the majority of cattle, sheep and goat slaughter are carried out in the backyard that results in poor quality raw hide and skins in the domestic.

3. MATERIALS AND METHODOLOGY

3.1. Description of the Study Area

The study was conducted in Adami Tulu -Jido kmbolach and Bora woredas (Figure 1).

Adami Tulu -Jido Kmbolach and Bora Woreda

Adami Tulu - Jido Kmbolach woreda is found in east shewa zone of Oromia Region at about 168 kilometers of Addis Ababa, which is located in the central rift valley of Ethiopia at latitude and longitude of 7°52'N 38°42'E with an elevation of 1636 meters above sea level. The woreda is consists of 38 Kebele. Livestock population of the woreda is estimated to be 403,349 animals; of these, cattle 218, 099, goats 130, 549, sheep 26, 949, donkey 25, 017, horse 953, and mule 1,782 are found in the area (Adami Tulu – Jidokombolcha Agricultural and Development Office, 2006). AdamiTulu-Jidokombolcha district is characterized by mixed livestock farming system. Cattle, goat, sheep and donkey are important livestock species reared in the area (ATJK district livestock Development and Health, 2008).

Bora Woreda is found in East shewa zone of Oromia Region of Ethiopia, located in the rift valley. It was part of former woreda of Dugda Bora. The administrative center of Bora is Bote (AlemTena). It has a latitude and longitude of 8.30°N 38.95°E with an elevation of 1,611 meter above sea level. The woreda is consists of 18 kebele. Livestock population of the woreda is estimated to be 208,959 animals; of these, cattle 91,210, goats 58,902, sheep 48, 030, donkey 8, 180, horse 1, 963 and mule 674 are found in the area (Bora woreda Agricultural and Development Office, 2006). Hides and skins are important commodity in both study area. Sheep skin comprises of more than 70% of the marketed skin in the woreda. It is reported that the skins in this woreda are of high quality because of their high fiber content. Cattle hides and shoats skins have been taken as one of the major important marketable commodities for the purpose of this study.

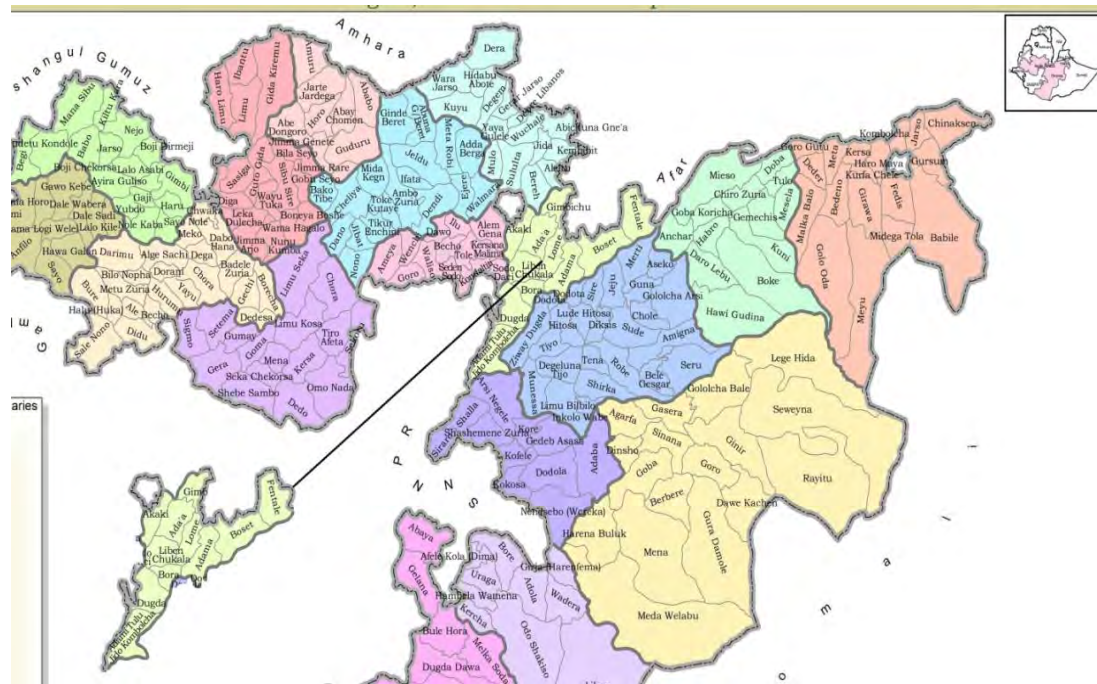


Figure 1: Map of the study area

3.2. Study Design, Study Population and Sampling Procedure

A cross-sectional study design was employed to study the hide and skin market chain, prevalence hide and skin defect and quality at the level of producers (homestead slaughter), middlemen, butchers and hide and skin collection centers. Two Woredas (Adami Tulu- JidoKombolcha and Bora) were selected purposively based on hide and skin supply and accessibility, to select a representative sample two stage random sampling procedure for farmers were implemented. For the homestead hide and skin suppliers, five peasant kebeles from each woredas were selected randomly from the list provided by woredas offices. The lists of households from each selected kebeles were obtained from development agents. Systematic random sampling procedure was employed to obtain names of households to be interviewed.

3.3. Sample Size Determination

3.3.1. Sample size determination for questionnaire survey

The sampling units were homestead hide and skin suppliers in the study area. The sample size required for the study was determined by the formula recommended by (Arsham, 2007) for survey studies as illustrated below:

$$N = \frac{0.25}{SE^2}$$

Where,

N=sample size

SE= standard error

Hence, at 5% standard error, the total number of respondents selected from woreda of Adami Tulu –JidoKombolcha and Bora woreda was 200. In addition to this we also interviewed all hide and skin collection centers, middlemen (brokers), butchers and tannery were included in the study. As the number of middlemen (brokers) butchers and collection centers (traders) involved in the hide and skin market chain is unknown, those encountered during the study were included.

3.3.2. Sample size determination for hide and skin defect prevalence

There is no previous investigation or assessment about the defect of hide and skin in the study area. Hence, the average expected prevalence rate was assumed to be 50% for the area within 95 % Confidence Intervals (CI) at ± 5 % desired accuracy. Subsequently, the number of study hide and skin was determined following the formula published in (Thrusfield, 2005).

$$N = \frac{1.96^2 \times p \exp (1 - P \exp)}{D^2}$$

Where, N=required sample size,

P =expected prevalence,

D^2 =desired absolute precision

Using the above formula, the sample size is calculated to be 384 irrespective of the animal species (sheep, goats and cattle) per woreda. The study was spending 8 weeks at each woreda where visits are made every other week. Therefore, by randomizing 48 hide and skin /weeks were examined for defect assessment. The study was lasted for four months expending.

From each woreda, 20 apparently healthy and 20 skins with generalized pre-slaughter defects were purposively selected, preserved and these materials have been sent to Leather Industry Development Institute, Addis Ababa, Ethiopia, for laboratory tests using the sanas test methods(South Africa National Accreditations Standards). The test result of tensile strength, percentage elongation and tear load, thickness, moisture content on dry basis and fat content has been collected and then manipulated using descriptive statics.

3.4. Data Collection

3.4.1. Questionnaire Survey

Visit Formal Survey Methods were applied to collect data. Various techniques and tools such as questionnaires were used to collect information from homestead hide and skin suppliers and traders. As well Secondary data also obtained from relevant sources (woreda offices, hide and skin collection centers, abattoirs etc).The questionnaire were pre-tested and then modified on the basis of the information obtained in the pre-tests. The extension workers who were known to the respondents were used to interpret and explain the questions in the course of individual interviews.

These workers were very helpful in communication between the researcher and the respondents. The questionnaire has mainly focused on the market chain, market problem, price between farm-gate and terminal market and analyze based on the information of farmers, local collectors and middlemen. Totally 200 homestead hide and skin suppliers were involved in each woreda in the questionnaire survey based on (Arsham, 2007)

formula. Whereas the record sheet mainly focuses in various defects which appear in hide and skin such as cockle, scratch, fly cut, pox, brand, scar and putrefaction respectively were filled simultaneously while taking the hide and skin sample.

Table 1: Distribution of house producer interviewed in different districts

Name of woreda	Kebeles of respondents	House hold population size	Sample size
AdamiTulu– JidoKombolcha	Abine Germama	5,881	18
	Bulbula	9,059	30
	Desta Abijata	7,149	25
	Kamo Gerbi	2,301	12
	Werja Wushgula	2,770	15
	Total	27,160	100
Bora	Berta	2,518	15
	Dalota Meti	2,545	17
	DodoWodera	4,622	26
	Ellen	2,237	12
	Malima Berri	4,760	30
	Total	16,682	100

3.4.2. Observation

The market condition was observed in the collection center/wholesalers focused on the price determination raw hide and skin. The observation was also utilized assessment status of hides and skins defect. For this purpose a systematic random sampling technique was employed. Where every other hide/skin was considered to assess hid and skin defects at collection centers.

3.4.3. Laboratory Test

Defect examination and physico-chemical characteristics of skin tested at the tannery. In the collection center among the total of 768 raw hide and skin in the study area 40 raw Goat skin was selected purposively and classified in to generalized defect and apparently normal to test physico- chemical characteristics like skin by appearance/defect, tensile strength, percentage elongation, tear load, thickness, fat content and moisture content. The skin was preserved by wet salted and kept in the collection center for one month. After that the preserved skin was transported to Addis Ababa leather industry development institute for further analysis of physico-chemical test skin quality.

The skin samples taken from the defected and normal goat skins testing ,physical characteristics like, tensile strength and percentage elongation were determined using test method of International Organization for Standardization, (ISO-3376, 2002), average tear load mean was determined using test method of International Organization for Standardization (ISO-3377, 2002) and, sampling method and sampling location for this characteristics were according to (ISO-2418 ,2005), thickness was in accordance with (ISO-2589, 2002). In the other hand chemical testing like moisture and fat content were determined according to (SLC4, 1986) test method. The results obtained in the present study were presented in the following table (12).

Procedure for Processing of Goat Skin

First goat skin was pre-soaked by using 200 liter water for five minutes and washed three times followed by the soaking process using 150 liter water, 0.2 kg sodiumsilcofloride and 0.3 kg soda ash then left overnight (~16 h) run for every 2 hours, drain next morning, press and pile for 4 hours, check (pH 9-9.5) → Painting which used for hair shaving by using 100 liter water with 1kg sodium sulfate for about 30 min. The fourth process→ Liming by using 100 liter water, 1kg sodium sulfate and 1kg sodium sulphhdtate for 30 min and leave overnight and 3 times stop at 27 min, then → deliming process using 250 liter water, 1kg ammonium sulfate and 0.5 kg sodium bicarbonate for 45 min and check (pH 8-9) followed →bating process using 100 liter water and 0.5 kg bating enzyme for 30

min and drain and wash. Then → degreasing using 80 liter water for 20 min then drains and wash. The next Pickling using 80 liter brine (water +salt) for 10 min, 1 kg formic acid for 20 min and 0.8kg sulfuric acid for 30min and dilution check $\text{Be}^\circ(2.8 -3)$ → Tanning using 3kg basic chromium sulfate 1kg sodiumformite and 0.8kg sodium bicarbonate for 30 min and check (pH 3.6-3.8) Within this process at wet blue stage defect assessment and grading was done. Then → Acid wash using 200 liter water, 0.3kg formic acid and 0.2kg non-ionic detergent agent left for 1hrs and then checks wet back drain → Neutralization using 100 liter water and 0.1kg Sodium formite then, left for 30 min check (pH 4.2-5) and drain → Re tanning using 150 liter water, 4kg retinal LSF, 3kg genetan Lx, mimosa and 2kg net fill powder then left for 60 min drop by drop. → Fat liquoring using 50 liter water, 3gene soft Fc 3 gene soft Sc, 2 nexopolnt and Fosfol 36-k after that check (pH 3.5.-3.6) and drain → Fixation using 2kg formic acid left for 45min after that drain, wash, pile ,hanging up, hanging dry, conditioning, milling and toggling.

3.4.4. Data management and statistical analysis

Data on hide and skin market chain and quality including , visual defect observation and physico- chemical test result were stored in Microsoft excel spread sheet and transferred to Statistical Package for Social Sciences (SPSS version 20.0) for analysis. Market condition and associated constraints of hide and skins was determined by using frequency distribution. Similarly, the occurrence of defects and grading of hide and skin at wet blue stage also was determined by using frequency distribution. On the other hand independent sample T test was performed using SPSS version 20 to compare the mean of physico-chemical characteristics of crust goat skin with the standard. If P value ≤ 0.05 , was considered statically significant.

4. RESULTS

5. 1. Characteristics of Hide and Skin Producers and Marketers

The questionnaire survey on 200 respondents indicates (table 2) that 77% of sample household respondents were male and 23% were female. About 54% of the household respondents were found in age group between 25-44 years, 43% of the households were between 45-64 years and the remaining 3% of the household respondents were above 65 years old. In the study woredas, moreover, 50% respondents were illiterate, 24% only read and write, 18% completed primary school, 6% joined secondary school and 2% had diploma. On the other hand, all butchers (20) available for interview were males in the study woredas. In general 45% of butchers were in the age group between 25-44 years and the remaining 55% butchers were in the age group between 45-64 years old.

From the total butchers 35% were illiterate, 25% read and write, 15% completed primary school, 15% joined secondary school and 10% had diploma. All the ten middlemen encountered were males of which 50% were in the age group between 25-44 years and the remaining 40% in the age group between 45-64 years old and 10% had above 64 years of age. Moreover, 50% of the middle men were illiterate, 30% can read and write, and the remaining 20% completed their elementary education. On the other hand all traders (2) available for the study were males and all respondents were the age group between 45-64 years old in study woredas. From the total respondent 50% were completed primary schools and 50% completed secondary schools.

Table 2: Characteristics of hide and skin producers and marketers

Variables	Market agents			
	Farmers (N =200)	Butchers (N =20)	Middlemen (N =10)	Trader (N =2)
Sex Male (%)	77%	100%	100%	100%
Female (%)	23%	0%	0%	0%
Total	100	100	100	100
Age 25-44(%)	54%	45%	50%	0%
45-64 (%)	43%	55%	40%	100%
>65 (%)	3%	0%	10%	0%
Total	100	100	100	100
Education level (Illiterate)	50%	35%	50%	0%
Read and Write (%)	24%	25%	30%	0%
Primary school (%)	18%	15%	20%	50%
Secondary school (%)	6%	15%	0%	50%
Diploma (%)	2%	10%	0%	0%
Total	100%	100 %	100%	100%

Household respondents ascertained that majority of them use hides and skins for cash income where as significant number of them keep the raw materials for making household utensils (table 3).

Table 3: Use of hide and skin for sampled house hold farmers

Use of hide and skin	Percentage
Cash income	73.5%
Make utensils	12.0%
Cash income	14.0%
And make utensils	
Not so important	0.5%
Total	100%

4. 2. Livestock Herd Composition and Annual Slaughter at Household

All interviewed household respondents practice mixed species livestock farming system where cattle, sheep and goats are the widely prevalent species in both study woredas (Table 4). In the study area, for all the three species, the mean annual slaughter at house hold level ranges between two and three animals, while at butchers' level it ranges between fourteen and ten animals annually (table 5).

Table 4: Overall herd distribution (%)

Species composition (N=200)	Percentage
Cattle, sheep, goat , donkey and horse	14%
Cattle and goat	12%
Cattle and sheep	14%
Cattle, sheep and goat	31%
Cattle, goat, sheep and donkey	13%
Goat and sheep	7%
Cattle, sheep and donkey	9%
Total	100

Table 5: Mean animal slaughters at house hold

Type of animal slaughter (N= 200)	House hold level Mean±SE
Goat slaughter	2.94±0.092
Sheep slaughter	2.75±0.105
Cattle slaughter	2.55±0.080

4.3. Defects of Skin and Hide Observed at Collection Centers

4.3.1. Defects identified on goat skin after processing

Visual examination of 768 of raw cattle hides and skins of goat and sheep revealed at least two defects in 97.8% of them. As a result the common defects attributed to quality deterioration were cockle; flay defect, scratch and scar, putrefaction, brand and pox (table 6). The result indicates that scratch flay defect and cockle were the dominant defects in goat, sheep and cattle respectively.

Table 6: Hide and skin major defects

Major defects	Percentage on		
	Goat	Sheep	Cattle
Cockle	36.6%	54.5%	68.1%
Flay defect	51.6%	55.9%	50%
Scratch	60.7%	29.5%	29.5%
Scar	26.2%	21.8%	19.3%
Putrefaction	17.5%	30%	18.7%
Pox	2.4%	0%	0.6
Brand	0.5%	0%	9.6%
Total examined	382	220	76



Figure 2: Sheep skin with flay defect

Both defective and apparently normal goat skins after tanning to wet blue stage have demonstrated different types of defects. Prevalence of cockle, scratch, putrefaction and pox lesion was increased after processing defective skins. None of the skins considered normal were free of defects. However, the appearance of defects such as cockle, scratch, putrefaction and pox lesion was higher in defective than in those considered normal ($P, 0.05$) (table 7, Figure 2).

Table 7: Defects recorded after processing goat skins identified defective and normal

Point of defect assessment	Defect type											
	Cockle%		Flay cut%		Scratch%		Scar%		Putrefaction%		Pox%	
	D	N	D	N	D	N	D	N	D	N	D	N
Before processing	45	0	45	0	25	0	45	0	35	0	10	0
After processing	80	30	20	50	60	30	30	70	70	20	20	10

Hint D= defected skin N=normal skin

4.3.2. Grades given to goat skin grouped as defective and normal

Table 8 shows goat skin grading done at wet blue stage. Most skins lie in the category of grades 3-5 for defective skins whereas most skins previously considered normal fall in grades four and five. More rejected skins were found in the group labeled defective.

Table 8: Skin grading at wet blue stage

Group %	Grade level at wet blue stage				
	2	3	4	5	6
Defective	5	25	25	30	15
Apparently normal	5.3	10.5	26.3	47.4	10.5

4.3. 3. Physicochemical characteristics of goat skin labeled as defective and normal

In laboratory physical quality analysis of goat skin labeled defective and normal in their fresh state was done at crust stage of processing. The findings revealed that both groups of skins had higher tensile strength and thickness than the standard. On the other hand, elongation capacity was within the standard range for both. On the contrary, the moisture

content was lower than the standard range whereas the undesirable fat content was higher than the maximum preferred in both cases. When values between defective and normal skins were compared, there was no significant variation for most of the measurements except a borderline significance for average tear load in Newton ($P=0.051$) whereby it is higher in skins considered normal than those taken as defective (table 9).

Table 9: Physical analysis and chemical testing defected crust goat skin in the study area

Parameter	Tensile strength/ mm ²	Elongation %	Average tear load (N)	Tear load (N/mm)	Thickens (mm)	Fat content	Moisture content
Mean							
± SE for defective	26.24±0.66	51.1±1	48.8±1.56	52.72±1.81	0.93±0.3	6.6±0.2	10.8±0.11
Mean							
± SE for normal	27.24±1.15	52.2±0.71	54.2±2.17	55.93±1.27	0.97±0.03	6.55±0.33	10.83±0.11
Standard value	≥15	40-70	50	100-125	0.7	3%	14-18

4. 4. Hide and Skin Marketing

4.4.1. Market flow and selling price

Majority of farmers sell their raw hide and skins to middlemen followed by collection centers. On the other hand, most butchers and middlemen sell their raw materials to collection centers (Table 10). Selling price increases as it goes from producers to tannery (Table 11). Producers earn better price when they sell hide and skins to collection centers than when they sell them to middlemen.

Table 10: Market flow of hides and skin

Producers/Traders	Middlemen %	Local processor %	Collection center %	Tannery %
Farmer (N= 200)	54	1.5	44.5	0
Butcher (N=20)	25	0	75	0
Middlemen (N=10)	0	10	90	0
Collection center (N=2)	0	0	0	100

Table 11: Selling price of hides and skins to different market actors

Product	Market actors and price in birr		
	Producer to middlemen	Producer and middlemen to collection center	Collection center to tannery
Sheep skin	32±0.24	38.1±0.3	65
Goatskin	7±0.24	13.1±0.26	26
Cattle hide/kg	2.9±0.05	4.23±0.1	10

4. 4.2. Factors affecting marketing of hides and skin

The survey result revealed that hides and skins market price was commonly determined by the buyer followed by negotiation based on quality of the product (table 12).

Table 12: Hide and skin price determinant

Price determinant			
Actors /agents	Seller(themselves)	Buyer	Negotiation
Farmer(N =200)	13.0%	79.5%	7.5%
Butcher(N =20)	0%	65%	35 %
Middle men(N =10)	30%	20%	50.0%
Traders/collection center(N=2)	0%	70%	30.0%
Total %	100	100	100

Access to market information is one of the determining factors in hide and skin marketing. Results from the survey also show that majority of the hide and skin producers do not get proper information on the price of the products prior to selling (Table 13).

Table 13: Market information source for hides and skins producers and marketers

Information source	Market actors			
	Farmers (N=200)	Butchers (N=20)	Middlemen (N=10)	Traders (N=2)
Personal observations	12%	20%	60%	20%
Broker	5%	15%	0%	0%
Friends or other producers	17%	15%	40%	50%
No information	66%	50%	0%	0%
Mass media	0%	0%	0%	30%
Total	100	100	100	100

Skin diseases and lack of competitive market were also among the major problems hampering hide and skin marketing. Other constraints were flay defects and injury as well as fluctuating prices (Table 14).

Table 14: Hide and skin Production and market constraint

Production problem (N=200)	% respondents
Disease	48.5
Flay defect	32
Injury	19.5
Market problem (N=200)	
Lack of competitive market	53%
Fluctuating price	29%
Lack of price information	18%
Total	100

5. DISCUSSION

This study was initiated to assess the quality and marketing of hides and skins in two selected woredas of East Showa Zone of the Oromia National Regional State. According to our survey response, majority of hide and skin producers sell their raw materials to the market to generate income. This disagrees with the finding of Hadush *et al.*, (2013) in Tigray region and Asegede *et al.*, (2015) who reported that only 31% and 44.14% respectively of household respondents sell skin to formal market.

There were also a number of respondents' who ascertained that they use especially cattle hide for making household utensils. Hadush *et al.*, (2013), Koloka and Moreki, (2010) and Kagunyu *et al.*, (2011) have also reported that hide and skins are used as a source of various materials for household use. This suggests that, although majority are aware of the importance of bringing hides and skins to the market, there are still significant number of the raw materials that fail to be channeled to the collection centers and tanneries.

5.1. Quality of hides and skins in the study areas

Several reasons may contribute to low quality output. According to Jabar *et al.*, (2002), these include poor animal husbandry (including inadequate and poor quality feeds, inadequate parasite and disease management) and inappropriate slaughtering, flaying, collection and initial processing methods used. Hide and skin defect assessments were made through visual inspection at collection centers in the study woredas. Consequently, the most common defects observed were cockle, flay defect, scratch, scar and putrefaction. CSA (2004) reported poor pattern, dirt and knife cut as the main defects of sheep and goat skin. Similarly, CSA (2004) has also indicated knife cut and corduroying are the most important defect observed on cattle hides. Berhe (2009) in Tigray also reported that disease and fly cut were the main defects of the hide. On the contrary, Bezabih (2014) has shown that filthiness, gauge marks and flay cut or poor pattern are the most important defects of sheep and goat skin and cattle hide in East Gojam Zone of the

Amhara Regional State. In a similar way our findings disagree with the report of Kiruthu, et al., (2000) that poor pattern, dirt and corduroying were the chief defects of wet sheep and goat skin in Bahirdar town. This suggests differences in the perception and practices of hide and skin management by the producers in different regions of the country. The high proportions of scratches in goat skins could be because of the browser feeding behavior of goats, so that they are vulnerable to spine abrasions, by thorny bushes on grazing and the thin layer of hair coat that cannot protect the skin from injury during rubbing against an object. As a result goats are more likely to acquire scratches on their life-spans than of sheep. Cockle was also the major defect observed in all the three species.

This is in line with the conclusion of Kassa (2006) that cockle, mange and pox are the main treats to the leather industry in Ethiopia. After processing, the prevalence of some of the above problems have even been more magnified suggesting that visual inspection is inefficient to detect all the defective skins. Also, those skins considered free of defects in the fresh/wet state were found having one or more defects. Defect assessment was done at wet blue stage. At this stage most defects are easily visible as the hairs are removed. Similarly the appearance of defects such as cockle, scratch, putrefaction and pox lesion was higher in skins designated defective than in those considered normal in a fresh state indicative of the relative importance of visual inspection.

The proportion of wet blue stage cockle defect reported in the present study was higher than the report by (Asp and Tauni, 1988) at Awash tannery, by (Abebayhu and Kibrom, 2010) at Sheba tannery (40.71%) and by (M. Assefa, D. Tesfaye, M. Taye, 2011) at Bahir Dar tannery (58.3%), while it was lower than the report at Dessie tannery by (Sertse and Wesson, 2007) and at Sebeta (89%) tannery by (Ermias ,2000). Abadi (2000) has also indicated that in addition to cockle as a primary problem, putrefaction and flay cut were the most important problems of hide and skin at tanneries. This study revealed that majority of goat skins identified as defective in a fresh state were categorized under grades 3-5 whereas most of the skins considered normal were grouped under grades 4-5 supporting the fact that apparently health skin does not always mean that they earn a

better grade. Several factors may contribute to this fact. Animals with skin diseases previously treated may remain with a permanent damage which is not visible with the naked eye. Producers may attempt to hide flay defects of various types by covering them with flesh etc so that such defects may be missed during inspection. An example to support this assumption is the detection of fly cuts in 50% of those skins labeled normal before processing. It could also be attributed to the experience of the inspector to identify and detect the different types of defects. Goat skin grades reported by Bezabih (2014) significantly varied from our report. He indicated that about 85% of the skins fall in grades I and II. This variation could be the result of the grading technique. Grading in our study was at wet blue stage of tanning whereas Bezabih graded the skins at wet salted stage before processing.

Our finding goes in line with the conclusion that large amount of money is lost due to direct rejection or costs incurred for defective skin processing (Sertse and Wossene, 2007). The tensile strength of both defective and the apparently normal goat skin in the present study were higher than the minimum value recommended by standards. This finding is higher than the value (22.3 N/mm²) reported by Hylli *et al.*, (2012) in Albania suggesting the better quality of our goats in this regards. Salehi *et al.*, (2013) in goats from sub humid hilly areas of Iran have also demonstrated that goat skin had tensile strength of 26N/mm² which is equivalent to our finding. Similarly, percentage elongations of both defective and normal skin in the present study were higher than the minimum value recommended by standards.

This high performance in percentage elongation emphasized that the skin has enough elasticity that provides good adaptation to users' size to the movements derived from the use of footwear. Percentage elongation in this study was lower than the value (56%) reported by Hylli *et al.*, (2012) and Salehi *et al.*, (2013) which indicates existence of breed difference in the elongation capacity of goat skin. The current result shows that both defective and normal skin tear load was below the minimum requirement recommended by Ethiopian standards. It is also lower than values reported by some other researchers such as Salehi *et al.*, (2013) in Iran and Yusuuf *et al.*, (13) in Nigeria

who reported tear load of around 235N/mm. The thickness of present study in both defective and normal skin was above the minimum. This result demonstrates that skin had better quality which makes more suitable for making boots and garments. The present result was similar to (Salehi *et al.*, 2013) in their measurement of physical properties of Iranian Lori goat breeds. Similarly, other finding supported the present study (Oliveira *et al.*, 2007) that goat leathers are thicker than leathers obtained from sheep. On the other hand the chemical test indicated moisture content of both defective and normal skin was lower than the minimum value recommended suggesting again the good natural quality of the products.

This result was similar with Sudha *et al.*, (2009), Salehi *et al.* (2014) and Passman and Sumner (1983) and their estimation for moisture content was around 11% on crust tanned sheep leather. Different from the above fact, the fat content of our goat skins was higher than the maximum recommended probably due to the fact that most goats are slaughtered at old age where the probability of fat deposition is high. Similar findings (5.8%) were also reported for goats in Sudan (Musa and Gsmelseed, 2013).

5. 2. Hide and skin marketing

The present result indicated that most household producers sell skin or hide in the form of fresh to middlemen (brokers). Even though brokers have not license they are easily accessible to household producers and collect directly going door to door in case of urban area and by setting temporary collection point at most accessible spot in case of rural areas. This finding is line with Hadush *et al.*, (2013) reported that 21% of respondents sell hide and skin to middlemen. However, selling to middlemen than collection centers makes them lose better price offer since collection centers buy the products at the same price from both middlemen and household producers. In the study area marketing flow of hide and skin starts from producers (farmers, butchers) and agents could be middlemen and collection centers with final destination to tanners this is in agreement with Ahmed (2000) who reported that the market chain for raw hide and skin consists of the primary producers/consumers, who were the initial sources (individual meat consumers, rural

slaughter slabs, municipal slaughter houses, abattoirs, meat processing plants), agents of traders, collectors, local tanners, regional medium/ small traders, regional/Addis Ababa big traders and tanneries. In the study area producers (farmers, butchers), the average selling price of sheepskin, goat skin, and cattle hide was 32 ± 0.24 birr/pieces, 7 ± 0.24 birr/pieces 3 ± 0.48 birr/kilogram respectively to middlemen. Price offer increases as it goes from producers to tannery. However, it should also be noted that costs of storage, preservation and transportation would increase the cost of supply especially at collection centers and tanneries. The average price of the current finding disagree with the finding of Hadush *et al.*, (2013) who reported that the average selling price of raw sheepskins was 41.43 birr.

In the study area there was lack of real price setting available for producers, even though the price of hides and skins was a reflection of world market price and the behavior of traders in pricing, an attempt was made to examine discriminating or competitive pricing strategy for hide and skin traders. For, most of household hide and skin producers; price is determined (set) by buyers. Similarly traders have the leading role to determine skin and hide price at butchers' level. The present finding is similar with Berhe (2009) who reported that hides and skins prices were determined by buyers in 62.8% of the cases. Scarborough and Kydd (1992) said that accurate and timely market information enhances market performance by improving the knowledge of buyers and sellers concerning prices, production, supply movements, stocks, and demand conditions at each level of the market.

Market access and lack of price information as well as absence of competitive market are among the major constraints in hide and skin marketing in our study areas. The current finding is similar with ILCA (1990) and who stated that absence of market information system minimizes the share of the total value that producers receive. Tschirley *et al.*, (1995) stated that the existence of information barriers results in unexploited market opportunities, seasonal gluts and produces with inadequate quality specification and control, inequitable returns to producers and fundamentally poor returns to production and marketing system as a whole. Our study confirmed that hides and skins brought to markets have quality problems due to disease, flay defect and injury. Livestock diseases,

as revealed by farmer respondents were found to be the major cause of hide and skin defect which resulted due to poor husbandry practices. This finding is similar to Zewdu (1998) and Ahmed (2000) who states defects including flay defect, improper shape, injury, diseases and parasites, as well as storage and transport conditions down-grade the quality of the raw material. In addition, the current result is similar to other finding (Mulat, 1999; Girma, 2002) who revealed that the main defects attributed to quality deterioration were flaying defect, injury, and putrefaction (due to delayed care). Such major problem may arise from lack of awareness on the management and handling of the raw materials. It may also be the result of poor live animal handling and inadequate veterinary care.

6. CONCLUSIONS AND RECOMMENDATIONS

The objective of this study was to evaluate the quality of hide and skins and their marketing situation in and around Adami Tulu-Jido Kombolcha and Bora woredas of East Showa Zone. It was observed that there are a number of pre- and post-slaughter defects affecting the quality of the raw materials. The grades given to at least goat skin at wet blue stage were low ranging between 3-5 for most of them and no skin was in grade one and rejects were prevalent. On the other hand, physico-chemical parameters indicative of natural characteristics of the skins have revealed that despite the defects observed above, the goat skins tested performed well on most of the measurements. This suggests that if those defects caused by management problems are minimized, the skin will have a better quality. There were some problems related to marketing of hide and skins that need the attention of all stakeholders. Easy access to market and market information and better price offer are essential to improve the transaction.

Therefore, based on the above conclusion, the following points are recommended

- Since most of the defects observed can be minimized or avoided through careful management of the animals and the skin and hides derived from them, continuous awareness creation and trainings must be given to livestock holders and development agents.
- Installation of differential price offers based on defined quality criteria will encourage producers to give due attention to quality.
- Encourage and incentivize legal hide and skin traders to get closer to the source so that fresh products are collected and farmers get better price information and offer.
- Since we have demonstrated that apparently normal goat skins were found to have a number of defects at wet blue stage of processing, visual inspection alone does not guaranty selection of raw materials for quality. Hence, better techniques should be developed if differential price offer based on quality should be installed.

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8. ANNEXES

Annex I . Survey Questioner Sheet

Households/farmers

This questionnaire format is designed to gather information on hide and skin defects and marketing in Adami Tulu-Jidokombolcha and Bora Woredas. Only respondents willing to participate will be considered for the questionnaire survey. All information each respondent provides and his/her name will remain confidential.

General information

1. Respondent ID____ Woreda _____Kebele _____Date _____

Demographic Characteristics of the respondent

Age _____ Gender, Female = 0 Male = 1,

2. Respondent education: A) illiterate B) primary school C) reading and writing
D) Secondary school D) Diploma E) Degree

3. Do you have livestock at home? A) Cattle B) sheep C) goat D) other_____

Respondent perception on hides and skin defects

4. Do you slaughter livestock at home? _____

5. On average how many sheep____/goat____ or cattle ____ did you slaughter last year?

6. How important is hide and skin for you? A) Cash income B) Make utensils
C) Not so important D) other specify_____

7. Did you slaughter any animal in the last three months? A) Yes B) No

8. If your answer is yes to Q7, how many Sheep____, Goat____ cattle____

9. What determines best selling price for sheep and goat skin?

A) Absence of defects such as flay cuts B) absence of defects such as skin lesions and brands C) color of the skin D) Freshness of the skin/hide E) size F) weight (hide)
G) Breed of animal H) Other specify_____

Respondent perception on hide and skin marketing

10. Did you sell Hides or Skins to market in the last three months? A) Yes B) no

11. If yes, where did you sell your Hides or Skins?

- A) To village market at B) to woreda market at B) to middlemen C) To collection center
D) to local processors E) other (specify)
12. What type of Hides did you sell in the last three months? A) Fresh B) Sun dried
C) Salted
13. What type of skins did you sell in the last three months? A) Fresh B) Sun dried
C) Salted
14. If you sold fresh, after how long following flaying? A) Within 12 hours
B) Within 24 hours C) within 48 hours
15. How much did you sell A) Sheepskin____, B) Goatskin ____?
C) Hide_____ to local market or middlemen?
16. How much did you sell A) Sheepskin_____, B) Goat Skin _____?
C) Hide_____ to collection center?
17. Who fixes the price? A) Myself B) the buyer C) national price D) negotiation
18. Did you face difficulty in finding buyers when you wanted to sell? 1= yes 2= No
- 19.If yes, what is the reason: A) Inaccessibility to market B) Lack of price information
C) Low price offer D) low quality product E) Other (specify) _____
20. Have you ever discarded the hide or skin because of sever defect A) Yes B) No
20. Did you know the market price before you sell your Hides and Skins? A) Yes B) No
21. If yes, how did you get price information of Hides and Skins in the market?
A) Broker B) personal observation C) Other Hides and Skins traders D) mass media
E) Friends/ other producer's
22. What did you do, when the Hides and/or Skins you offered to the market were not
sold? A) Keep for home use B) Sell at lower price C) Sell or give to local processors
D) Discard it
23. What is the problem you encountered in hide and skin marketing?
A) Fluctuating price B) lack of competitive market C) lack of price information
D) Inability to provide the desired quality D) other (specify) _____
24. What is your suggestion to solve each problem? _____

B. Middlemen

This questionnaire format is designed to gather information on hide and skin defects and marketing in Adami Tulu-Jidokombolcha and Bora woredas respondents willing to participate will be considered for the questionnaire survey. All information each respondent provides and his/her name will remain confidential.

General Information

1. Respondent ID____ Woreda _____ Kebele _____ Date _____
2. Demographic Characteristics of the respondent
Age_____ Gender, Female = 0 Male = 1,
3. Respondent Education: A) Illiterate B) Primary school C) Reading and writing
D) Secondary school D) Diploma E) Degree
4. How long have you been in hides & skins collecting? A) < 1 year B) 1-5 years C) 6-10 years D) above 10 years
5. When did you participate in Hides & Skins collection? A) Every market day B) Every day C) Only during holidays D) other (specify) _____
6. Where did you buy the skin you have to day? _____
7. Where did you buy the hide you have to day? _____

Respondent perception on hides and skin selection criteria

8. How important is hide and skin in your opinion? A) Personal profit for a living
B) National importance C) foreign currency generation D) Other specify _____
9. What criteria do you use to buy hides? A) Size B) absence of flay defects
C) Weight D) absence of pre slaughter defects E) freshness F) No criteria used
10. What determines best selling price for sheep and goat skin?
A) Absence of defects such as flay cuts B) absence of defects such as skin lesions and brands C) color of the skin D) Freshness of the skin/hide E) size F) weight (hide)
G) Breed of animal H) other specify _____

Respondent perception on hide and skin marketing

11. From where did you mainly purchase Hides & Skins in the last one month?
A) Farmer B) Other collector C) Hides & Skins Broker D) Butcheries E) Other (specify) _____
12. How much did you buy sheep skin A) wet____? B) Sundried____? C) Salted____?
13. How much did you buy goat skin A) wet____? B) Sundried____? C) Salted____?

14. How much did you buy cattle hide A) wet____? B) Sundried____? C) Salted____?
15. Did you sell hides or skins to market in the last one month? A) Yes B) no
16. If yes, where did you sell your hides or skins? A) To village market
B) To woreda market C) to middlemen
D) To collection center E) to local processors F) other (specify) _____
17. What type of Hides did you sell in the last three months? A) Wet B) Sun dried
C) Salted
18. What type of sheepskin did you sell in the last one month? A) Wet B) Sun dried
C) Salted
19. What type of goatskin did you sell in the last one month? A) Wet B) Sun dried
C) Salted
20. If you sold wet, after how long following purchasing? A) Within 6 hours B) within 12 hours C) within 24 hours
21. Which type of hide is highly demanded in the market in the last one month?
A) Wet B) Air dried C) Salted D) Other (specify) _____
22. Which type of goatskin is highly demanded in the market in the last three months?
A) Wet B) Air dried C) Salted D) Other (specify) _____
23. Which type of sheep Skin is highly demanded in the market in the last three months?
A) Wet B) Air dried C) Salted D) Other (specify) _____
24. How much did you sell A) Sheepskin_____, B) Goatskin____?
C) Hide_____ to local market or collection center?
25. How much did you sell A) Sheepskin_____, B) Goatskins____?
C) Hide___ to local tannery?
26. Who fixes the price? A) Myself B) the buyer C) national price D) negotiation
27. Did you face difficulty in finding buyers when you wanted to sell? 1= yes 2= No
28. If yes, what is the reason: A) Inaccessibility to market B) Lack of price information
C) Low price offer D) low quality product E) Other (specify) _____?
29. Have you ever discarded the hide or skin because of sever defect A) Yes B) No
30. Did you know the market price before you sell your Hides and Skins? A) Yes B) No
31. If yes, how did you get price information of Hides and Skins in the market?
A) Broker B) personal observation C) Other Hides and Skins traders D) mass media

E) Friends/ other producers

32. Did the price of Hides & Skins in this market vary from season to season? A) Yes

B) No

33. If yes, what was the reason? A) Export price variation B) Factory/Tannery price variation C) Wholesalers price setting D) Other (specify) _____

34. When the price variation reaches high? A) During holidays B) Other than holidays C) Other (specify)

35. Did the supply of Hides & Skins in this market vary with season? A) Yes B) No

36. If yes, what was the reason? A) Price change B) Transportation problem C) Drought D) Disease incidence E) Other (specify) _____?

37. At what time of the year did Hides & Skins supply, demand and price reach their respective peak?

Time	Supply	Demand	Price
A. At festival period/holidays			
B. At wet time period other than holidays			
C. At dry time period other than holidays			
D. Other (specify)			

38. What did you do, when the Hides and/or Skins you offered to the market were not sold? A) Sell at lower price B) Sell or give to local processors C) discard it

39. What problems did you encounter in hide and skin marketing? A) Fluctuating price B) lack of competitive market C) lack of price information D) inability to provide the desired quality D) Other (specify) _____?

40. What is your suggestion to solve each problem? _____

C. Hide and skin collection centers

This questionnaire format is designed to gather information on hide and skin defects, and marketing in Adami Tulu- Jidokombolcha and Bora woredas. Only respondents willing to participate will be considered for the questionnaire survey. All information each respondent provides and his/her name will remain confidential.

General information

1. Respondent ID _____ Woreda _____ Kebele _____ Date _____

Demographic characteristics of the respondent

Age _____ Gender, Female = 0 Male = 1

2. Respondent Education: A) Illiterate B) Primary school C) Reading and writing
D) Secondary school D) Diploma E) Degree

3. How long have you been in Hides & Skins collecting? A) < 1 year B) 1-5 years
C) 6-10 years D) above 10 years

Respondent perception on hides and skin defects

4. How important is hide and skin in your opinion? A) Personal profit for a living
B) National importance C) foreign currency generation D) other specify _____

5. What criteria do you use to buy hides? A) Size B) absence of flay defects
C) Weight D) absence of pre slaughter defects E) freshness F) No criteria used

6. What criteria do you use to buy skins? A) Size B) absence of flay defects
C) Weight D) absence of pre slaughter defects E) freshness F) No criteria used

7. What determines best selling price for sheep and goat skin?

A) Absence of defects such as flay cuts B) absence of defects such as skin lesions and
brands C) color of the skin D) Freshness of the skin E) size F) weight (hide)

G) Breed of animal H) other specify _____

8. What determines best selling price for cattle/camel hide?

A) Absence of defects such as flay cuts B) absence of defects such as skin lesions and
brands C) color of the skin D) Freshness of the hide E) size F) weight (hide) G) Breed of
animal H) Other specify _____

Respondent perception on hide and skin marketing

9. From whom did you mainly purchase Hides & Skins in the last three month?

A) Producer B) other collector C) middlemen D) Butcheries E) Other (specify) _____?

10. How much did you buy sheep skin A) wet _____? B) Sundried _____? C) Salted _____?

11. How much did you buy goat skin A) wet _____? B) Sundried _____? C) Salted _____?

12. How much did you buy cattle hide A) wet _____? B) Sundried _____? C) Salted _____?

13. Did you sell Hides or Skins in the last three months? A) Yes B) no

14. If yes, where did you sell your Hides or Skins?

- A) Tannery (Name and address) _____
- B) Regional wholesalers (Name and address) _____
15. What type of Hides did you sell in the last three months? A) Wet B) Sun dried
C) Salted
16. What type of sheepskin did you sell in the last one month? A) Wet B) Sun dried
C) Salted
17. What type of goatskin did you sell in the last one month? A) Wet B) Sun dried
C) Salted
18. If you sold wet, after how long following purchasing? A) Within 6 hours
B) Within 12 hours C) within 24 hours
19. Which type of Hide is highly demanded in the market in the last three months?
A) Wet B) Air dried C) Salted D) Other (specify) _____
20. Which type of goat Skin is highly demanded in the market in the last three months?
A) Wet B) Air dried C) Salted D) Other (specify) _____
21. Which type of sheep Skin is highly demanded in the market in the last three months?
A) Wet B) Air dried C) Salted D) Other (specify) _____
22. How much did you sell sheep skin: A) wet____, B) salted ____ C) Sundried____?
23. How much did you sell Goat skin: A) wet____, B) salted ____ C) Sundried____?
24. How much did you sell cattle hide: A) wet____, B) salted ____ C) Sundried____?
25. Who fixes the price? A) Myself B) the buyer C) national price D) negotiation
26. How many A) sheep skin B) Goatskin C) cattle hide did you buy in the last one year (A)____ (B)____ (C) ____?
27. How many of your A) sheep skin B) Goatskin C) cattle hide were rejected by your buyer in the last one year (A)____ (B)____ (C) ____?
28. Did you face difficulty in finding buyers when you wanted to sell? 1= yes 2= No
29. If yes, what is the reason: A) Inaccessibility to market B) Lack of price information
C) Low price offer D) low quality product E) Other (specify) _____]
30. Have you ever discarded the hide or skin because of severe defect A) Yes B) No
31. Did you know the market price before you sell your Hides and Skins? A) Yes B) No
32. If yes, how did you get price information of Hides and Skins in the market?
A) Broker B) personal observation C) Other Hides and Skins traders D) mass media

E) Friends/ other producer's

33. Did the price of Hides & Skins in this market vary from season to season?

A) Yes B) No

34. If yes, what was the reason?

A) Export price variation B) Factory/Tannery price variation /setting

C) Wholesalers price setting D) Other (specify) _____

35. When the price variation reaches high? A) During holidays B) Other than holidays

C) Other (specify)

36. Did the supply of Hides & Skins in this market vary from season to season? A) Yes

B) No

37. If yes, what was the reason? A) Price change B) Transportation problem C) Drought

D) Disease incidence E) Other (specify) _____

38. At what time of the year did Hides & Skins supply, demand and price reach their respective peak?

Time	Supply	Demand	Price
A. At festival period/holidays			
B. At wet time period other than holidays			
C. At dry time period other than holidays			
D. Other (specify)			

39. What did you do, when the Hides and/or Skins you offered to the market were not sold? A) Sell at lower price B) Sell or give to local processors C) discard it

40. What is the problem you encountered in hide and skin marketing?

A) Fluctuating price B) lack of competitive market C) lack of price information

D) Inability to provide the desired quality D) inability to provide the desired quantity

E) Other (specify) _____

41. What is your suggestion to solve each problem? _____

D. Local tannery

This questionnaire format is designed to gather information on hide and skin defects, and marketing in Adami Tulu-Jidokombolcha and Bora woredas. Only respondents willing to

participate will be considered for the questionnaire survey. All information each respondent provides and his/her name will remain confidential.

General information

1. ID of person responding_____

Respondent's position in the tannery _____Tannery's Address

2. Region_____ Zone_____ Woreda_____ Town_____

Respondent perception on hides and skin defects

3. How important is hide and skin in your opinion? _____

4. On average, how much cattle hides do you receive in your tannery per month? _____

5. On average, how much goat skins do you receive in your tannery per month? _____

6. On average, how much sheep skins do you receive in your tannery per month? _____

7. What criteria do you use to buy hides? A) Size B) absence of flay defects C) Weight
D) absence of pre slaughter defects E) freshness F) proper preservation

G) No criteria used

8. What determines best selling price for sheep and goat skin?

A) Absence of defects such as flay cuts B) absence of defects such as skin lesions and brands C) Color of the skin D) Freshness of the skin/hide E) size F) weight

G) Breed of animal H) other specify_____

9. What determines best selling price for cattle/camel hide? A) Absence of defects such as flay cuts B) absence of defects such as skin lesions and brands C) color of the skin

D) Freshness of the skin/hide E) size F) weight (hide) G) Breed of animal

H) Other specify_____

10. At what state or condition do you often buy cattle hides? A) Wet B) salted

C) Sundried

11. At what state or condition do you often buy sheep and goat skins? A) Wet B) salted

C) sundried

12. If you also buy wet skin/hide, do you preserve them until processing? A) Yes B) No

13. Do you use additional preservation method for hides and skins that have already been preserved? A) Yes B) No

14. If yes to question 9, mention the method used_____

15. Up to which stage does your tannery processes sheep and goat skins_____

16. Up to which stage does your tannery processes cattle hides _____
17. Have you ever discarded the hide or skin because of sever defect A) Yes B) No
18. In your opinion, what are the major causes of the rejection in order of importance?
19. On average how much percent of the hides are rejected in your tannery?
20. On average how much percent of sheep and goat skins are rejected in your tannery?

Respondent perception on hide and skin marketing

21. Who are the major sources of hides and skins for your tannery? A) Wholesalers
B) Collection centers C) middlemen D) producers
22. Where are the major sources of hides and skins for your tannery? _____
23. Which type of raw material is your best preference under good management?
A) Unpreserved wet material B) salted material C) sun/air dried material D) we accept all
24. How much did you pay for a good sheep skin in A) wet state ____ B) salted _____?
C) Sundried _____
25. How much did you pay for a good goat skin in A) wet state ____ B) salted _____?
C) Sundried _____?
26. How much did you pay for a good cattle hide in A) wet state ____ B) salted _____?
C) Sundried _____?
27. Who buys your products? _____?
28. Who fixes the price of your product? A) The buyer B) myself C) international market
29. Which products are more demanded? A) From cattle hide B) from goat skin
C) From sheep skin
30. At what time of the year do you get best price? _____?
31. At what time of the year do you get lowest price? _____?
32. How much did you sell processed A) Sheepskin _____, B) Goatskin _____,
C) Hide _____ to your customer?
33. Did you face difficulty in finding buyers when you wanted to sell? 1= yes 2= No
- 34.If yes, what is the reason: A) Inaccessibility to market B) Lack of price information
c) Low price offer D) low quality product E) Other (specify) _____
35. Did the supply of Hides & Skins in this market vary from season to season?
A) Yes B) No

36. If yes, what was the reason? A) Price change B) Transportation problem C) Drought
D) Disease incidence E) holly days F) Other (specify) _____

37. At what time of the year did Hides & Skins supply, demand and price reach their respective peak?

Time	Supply	Demand	Price
A. At festival period/holidays			
B. At wet time period other than holidays			
C. At dry time period other than holidays			
D. Other (specify)			

38. What did you do, when the products you offered to the market were not sold? A) Sell at lower price B) keep it until the price gets higher C) Sell it for local use
D) Others specify _____

39. What is the problem you encountered in your industry and marketing of your products? A) Inadequate raw material supply B) poor quality of raw material
C) Lack of market incentives D) frequent power cuts E) inconsistent market price
E) Lack of buyers F) others, specify _____

40. What is your suggestion to solve each problem? _____

Annex II Livestock Population in the Selected Kebeles

	Total livestock population in selected kebeles					
Name of kebeles	Cattle	Sheep	Goat	Horse	Mule	Donkey
Abine Germama	7723	1167	1868	4	15	893
Bulbula	9556	547	2348	76	9	260
Desta Abijata	7026	710	1439	47	28	619
Kamo Gerbi	2365	1055	3439	30	10	1200
Werja Wushgula	1223	696	975	8	2	228
Total	27893	4175	10069	165	64	3200
Berta Semi	4462	858	1434	34	10	481
Dalota Meti	7063	800	2500	31	25	820
Dodo Wedera	10045	1796	490	44	21	812
Malima Beri	3909	5837	2297	5	_____	142
Ellen	2094	2440	1068	40	110	984
Total	27573	11731	7789	154	166	3239