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Review Article

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Hides and Skins Production Improvement Pillars and Initiatives the Case in Ethiopia: A Review of Literature

Teklay Asgedom Teferi

Manufacturing Industry Development Institute (MIDI); Leather and leather Products Industry Research and Development Center (LLPIRDC), Addis Ababa, P.O. Box 5, Code 1058, Ethiopia

***Corresponding author**
Teklay Asgedom Teferi, Manufacturing Industry Development Institute (MIDI); Leather and leather Products Industry Research and Development Center (LLPIRDC), Addis Ababa, P.O. Box 5, Code 1058, Ethiopia.

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ABSTRACT

The hides and skins sector represents a significant source of foreign exchange and livelihood for Ethiopia, yet its potential remains constrained by pre- and post-slaughter defects that diminish quality and international market competitiveness. This study identifies the core pillars essential for improving hides and skins production in Ethiopia and evaluates the corresponding initiatives aimed at addressing these challenges. Through a descriptive case study analysis, the research highlights that the primary defects such as branding, flayning cuts, and poor preservation stem from deep-rooted issues across the value chain. The foundational pillars for improvement are identified as: Animal Management, focusing on breed improvement, health, and pre-slaughter welfare; Slaughtering and Flaying Practices, emphasizing training and modern facility upgrades; Post-Slaughter Handling and Preservation, promoting proper salting and storage techniques; and Market Linkages and Policy Support, enhancing value addition and export standards. The findings reveal that while isolated initiatives exist, a disjointed effort and lack of coordinated enforcement undermine their effectiveness. A synergistic approach, integrating these four pillars, is paramount for transforming the sector.

The study demonstrates that sustainable production improvement is not dependent on a single solution but on the simultaneous strengthening of four interdependent pillars: animal management, slaughterhouse operations, post-slaughter handling, and a supportive policy and market environment. The current state of the sector is characterized by a clear understanding of the problems but a critical lack of coordinated and enforced implementation of solutions. Without an integrated strategy, the sector will continue to incur significant economic losses due to downgraded and rejected products in the global market. It is recommended that a National Hides and Skins Improvement Taskforce, comprising representatives from different stakeholders, be established. This body should: Mandate and Enforce Standards: Develop and strictly enforce a national quality standard for hides and skins, from farm to port. Implement Integrated Training Programs: Roll out large-scale, practical training for farmers, traders, and abattoir workers on animal welfare, flaying techniques, and immediate preservation methods. Incentivize Quality: Introduce a grading and pricing system that transparently rewards suppliers for higher-quality raw materials, creating a financial incentive for improvement. Facilitate Market-Oriented Production: Foster stronger linkages between tanneries and pastoralist communities to ensure production meets specific international buyer requirements.

Keywords: Ethiopia, Hides and Skins, Value Chain, Leather Industry, Quality Improvement

Introduction

Ethiopia is a country located in the east of Africa endowed with blessed agro ecological diversity and huge livestock resources

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[1]. It boasts the 5th largest livestock population globally and ranks first in Africa as of 2021, with substantial growth over the past two decades [2]. The recent estimates of livestock population in Ethiopia are 70.3 million Cattle; 42.9 million Sheep; 52.5 million Goats; 4.5 million Camels; 2.9 million Horses; 1.9 million Mules; 8.5 million Donkeys and 56.5 million Poultry [1]. The livestock sector significantly contributes to Ethiopia's economy, accounting for 20% of the total GDP, 45% of agricultural GDP, and 30% of agricultural employment. Beyond economic contributions, livestock provides food, draught power, social functions, and raw materials like hides and skins (HSs) for industries. Despite being a top livestock producer which is the base for leather production, Ethiopia was only the 13th Hides and Skins producer worldwide in 2021 [2].

A study conducted by MoA, also confirmed that the hides and skins sector has long been a cornerstone of Ethiopia's economy, representing a significant source of foreign exchange earnings and livelihood for a substantial portion of the population engaged in agriculture [3]. Despite this inherent potential, the sector has historically been hampered by a paradox: possessing one of the largest livestock populations in Africa, the country has struggled to consistently translate this advantage into high-quality, value-added leather products that meet international standards. The economic return from this resource is substantially diminished by a high prevalence of defects, poor flaying techniques, inadequate preservation methods, and inefficiencies across the supply chain [4]. These shortcomings not only lead to massive post-harvest losses but also relegate a majority of Ethiopian hides and skins to lower-quality, commodity-grade markets, thereby forgoing the significant value addition achievable through finished leather and manufactured goods.

Recognizing these challenges, a strategic and multi-faceted approach is imperative to revitalize the sector. This paper examines the critical pillars and strategic initiatives necessary for the holistic improvement of hides and skins production in Ethiopia. It moves beyond identifying problems to proposing a structured framework for sustainable enhancement. The discussion is anchored on key intervention areas that form the foundational pillars of improvement, including advancements in animal husbandry and health, the modernization of flaying and collection practices, the standardization of preservation and handling procedures, and the strengthening of the market linkage and policy environment.

The objectives of this analysis therefore are:

- To identify and elaborate the four core pillars essential for improving the quality and quantity of raw hides and skins in Ethiopia.
- To propose specific, actionable initiatives under each pillar, focusing on practical interventions from farm-to-tannery.
- To analyze the potential impact of these integrated initiatives on the economic competitiveness of the Ethiopian leather industry.

Pillars for Improvement

Pre-Slaughter and Animal Husbandry

The quality of finished leather is fundamentally determined by the condition of the raw hide or skin, which is largely influenced by pre-slaughter animal husbandry practices. Defects acquired during the animal's life, such as branding marks, scratches from poor handling, and damage from parasites, significantly reduce the value of raw materials and limit their suitability for high-end leather products [5]. Research underscores the scale of this problem, with studies indicating that up to 65% of all defects in hides and skins occur during the pre-slaughter stage, surpassing losses from peri- and post-slaughter phases combined [6]. These pre-slaughter defects include scratches, wounds, horn rakes, branding, tick bites, lumpy skin disease, pox, and the consequences of poor nutrition, all of which compromise the structural and aesthetic integrity of the final leather.

Nutritional deficiencies directly affect hide quality by impairing collagen formation, resulting in thinner, weaker hides with reduced elasticity and increased susceptibility to damage [7]. Diseases such as lumpy skin disease (LSD) in cattle and sheep pox cause nodular lesions and scarring that persist after tanning, leading to downgrading or rejection by tanneries [8]. Bacterial infections like dermatophilosis produce a “pinhole” appearance on hides, while fungal conditions such as ringworm cause hair loss and permanent scarring, further diminishing commercial value [9]. Mechanical damage from thorns, barbed wire, and horn rakes, as well as improper handling during transport or housing, contribute to cuts, bruises, and contamination that degrade hide quality [7].

To mitigate these issues, improved animal husbandry is essential. This includes providing balanced nutrition, implementing disease and parasite control programs, using humane handling practices, avoiding branding on prime hide areas, and ensuring safe housing and transport conditions [9]. Such measures not only enhance animal welfare but also significantly improve the quality and economic value of raw hides and skins, forming the foundation for a competitive leather industry.

Improve Animal Health to Reduce Diseases and Parasites that Damage Hides/Skins

Improving animal health to reduce diseases and parasites is essential to enhance the quality of hides and skins in Ethiopia. A primary source of defects in raw hides and skins is the high prevalence of external parasites and skin diseases, which cause lesions, holes, and scars that weaken the leather and result in blemished products often downgraded to lower-grade uses [10]. Coordinated national animal health programs, which include regular dipping against parasites and vaccination campaigns, are vital in mitigating these defects and improving hide quality. Strengthening veterinary services and increasing farmer awareness about animal health management are directly linked to producing a higher proportion of first-quality raw materials entering the leather supply chain, as cited in Gebremichael et al [11,12]. In Ethiopia, projects such as the Livestock and Irrigation Value Chains for Ethiopian Smallholders (LIVES) project have demonstrated the importance of technology transfer, skill training, and awareness for better animal health and hide management practices, resulting in improved quality hides that meet industrial standards [13].

Thus, investment in regular and integrated animal health interventions including parasite control, vaccination, and

improved veterinary infrastructure combined with educating livestock owners forms the cornerstone for reducing hide and skin defects caused by diseases and external parasites. This translates not only into better animal welfare but also significantly enhances the economic value of Ethiopia's leather sector by ensuring more first-quality raw materials suitable for high-value leather products.

Implement Better Animal Management Practices to Prevent Pre-Slaughter Defects

Poor animal handling and management practices are major contributors to pre-slaughter defects in hides and skins in Ethiopia. Traditional practices such as hot iron branding, use of rough tethering materials, and housing animals on abrasive surfaces cause wounds that leave permanent scars, significantly degrading leather quality. This is exacerbated by a general lack of awareness among producers about the direct link between animal welfare and the final quality of the leather produced [14]. Additionally, the lack of standardized transportation and lairage systems in abattoirs results in bruising and injuries just before slaughter [15]. Research highlights that these mechanical and handling-related defects constitute a large portion of pre-slaughter damage, which can amount to 65% of total hide defects recorded by Ethiopian tanneries, leading to rejection rates as high as 50-60% at certain times of the year [16,5].

To prevent these avoidable defects, adopting improved management practices is crucial. Alternatives such as ear tagging or electronic identification can replace traditional branding, thereby reducing skin damage. Providing soft bedding instead of hard, abrasive floors and properly training handlers to embrace humane, gentle techniques can further minimize injuries. Educating pastoralists and farmers on the economic benefits of producing higher quality leather creates strong incentives for investing in such better practices [5]. Broader efforts within Ethiopia also stress the need for enhanced slaughterhouse facilities, skilled personnel, and integrated extension services that support livestock owners in implementing improved husbandry and handling methods. Together, these interventions are essential for reducing physical defects on hides and improving both the welfare of animals and the competitiveness of the leather industry.

Slaughtering and Post-Slaughter Handling

The defects acquired during slaughtering and the immediate post-slaughter phase, such as flaying marks, brand marks, and poor preservation, severely degrade the quality and value of the raw material. Addressing this requires targeted interventions in infrastructure and human capital. This stage is critically important because defects introduced here are intrinsic and cannot be remedied in subsequent processing, effectively determining the maximum potential quality of the final leather product [17].

The primary challenges in this pillar are threefold:

Poor Slaughtering and Flaying Techniques

The majority of slaughtering in Ethiopia is conducted in municipal abattoirs that often lack modern equipment and standardized procedures. Inadequate training of personnel leads to deep flaying cuts, score marks, and holes from improper knife handling, which significantly reduces the usable area of the hide [18]. Furthermore, traditional animal branding for identification causes deep tissue damage that manifests as brand marks on the finished leather, rendering it unsuitable for high-value aniline finishes.

Ineffective Preservation Methods

A major bottleneck is the reliance on inefficient and inconsistent salt curing. The use of contaminated salt, inadequate salting quantities, and delayed preservation due to poor collection systems lead to bacterial growth, resulting in hair slip, putrefaction, and red heat staining [19]. This not only diminishes the quality but also leads to substantial quantitative losses.

Fragmented Supply Chain and Lack of Incentives

The collection of raw hides and skins from a vast and dispersed smallholder livestock system is a logistical challenge. The current system often lacks a quality-based pricing mechanism, providing no financial incentive for farmers and middlemen to improve their handling and preservation practices [20].

Addressing these challenges requires a multi-pronged approach focused on infrastructure and human capital development:

Infrastructure Investment

Upgrading public abattoirs with modern facilities such as overhead rail systems, appropriate bleeding rails, and fleshing machines is crucial. Establishing centralized, well-equipped flaying floors can standardize the process. The government and private sector must also invest in reliable cold chain facilities and promote the use of solar-powered drying systems for sheep and goat skins to mitigate preservation losses [19].

Human Capital Development

Implementing large-scale, practical training programs for slaughterhouse workers, butchers, and farmers is essential. These programs should focus on humane slaughter techniques, proper flaying, and the economic impact of their actions. Training on correct salt curing methods, immediate preservation, and proper storage and transportation is equally vital [17].

Policy and Institutional Reforms

Introducing and enforcing a transparent, quality-based pricing system that rewards the supply of defect-free raw materials would create a powerful market-driven incentive for improvement [21]. Strengthening extension services to educate livestock owners on animal husbandry practices that improve skin quality, such as avoiding branding, is also a key long-term strategy.

Modernize Slaughtering Facilities and Slabs to Improve Hygiene

The current state of many slaughterhouses in Ethiopia is a significant source of contamination. A report from the Leather Industry Development Institute (LIDI) of Ethiopia emphasizes that investments in infrastructure are crucial, stating that "improving the infrastructure of slaughterhouses and flaying operations is vital to produce quality raw hides and skins" (LIDI, 2017) [9]. Modernization includes introducing concrete floors, adequate water supply, waste management systems, and clean hanging rails to prevent fecal and bacterial contamination, which directly translates to higher-quality raw hides and skins for the tanneries.

Train Slaughterhouse Personnel on Proper Flaying Techniques to Minimize Mechanical Damage

A large proportion of hide and skin defects are directly caused by improper use of knives during flaying. These mechanical damages, such as deep cuts and scores, render portions of the hide unusable for high-value products. Research confirms that "most of the defects were due to flaying and post-flaying operations," highlighting a direct need for skilled labor [22]. Therefore, implementing continuous and standardized training programs for slaughterhouse personnel is essential. Such training would focus on correct incision lines, knife handling skills, and the economic impact of poor flaying, ultimately reducing defects and increasing the yield of first-quality leather.

Preservation, Storage, and Transportation

The critical period immediately after slaughter determines the ultimate quality and value of hides and skins. In Ethiopia, significant losses occur due to inadequate preservation and poor handling before the raw materials even reach the tannery. Therefore, improving methods for preservation, storage, and transportation is a essential pillar for sectoral growth.

Improve Methods of Preserving Fresh Hides Immediately After Slaughter, Such as Using Salt, to Prevent Bacterial Degradation

A primary cause of quality degradation is the lack of immediate and effective preservation. As noted in a sector analysis, "the major constraining factors for the poor quality of hides and skins in Ethiopia are flaying (removal of the skin) defects, and poor preservation and handling practices" [23]. Without proper preservation, bacterial growth and putrefaction begin rapidly, leading to incurable defects like hair slip and grain damage. Promoting the use of adequate, clean salt for curing moving away from traditional sun-drying or using contaminated salt is a fundamental step. UNIDO, has emphasized that introducing improved curing techniques and better-quality salt can dramatically reduce pre-tannage losses, which are a significant drain on the sector's profitability [24].

Establish Better Storage and Transportation Networks to Maintain Hide Quality

Even when hides are adequately cured, their quality can deteriorate in storage or during the often-long journey to central markets or tanneries. In many cases, "inadequate infrastructure for collection, transportation, and storage of raw hides and skins" exacerbates the problem of quality deterioration [25]. Establishing dedicated collection centers with controlled environments to prevent moisture and insect damage is crucial. Furthermore, improving transportation logistics, such as using covered trucks and avoiding the stacking of heavy loads on wet-salted hides, is necessary to prevent physical damage and decomposition. A coordinated effort to build a more efficient supply chain from slaughterhouse to tannery is vital for ensuring that the quality achieved through good preservation is not lost thereafter.

Tanning and Manufacturing

A central pillar for improving the Ethiopian leather sector is the modernization of its tanning and manufacturing processes. A primary strategy involves the concerted effort to upgrade tanneries and leather goods manufacturing industries to improve final product quality. As noted in a sector-wide analysis, many of Ethiopia's tanneries struggle with inconsistent output and lower-grade leather, which diminishes their competitiveness in international markets [26]. This upgrade is not merely a matter of repair but a fundamental shift towards adopting international quality standards and more efficient production techniques to add significant value to the raw materials.

Directly linked to this is the need to encourage investment in technology and modern equipment. The reliance on outdated machinery and conventional methods is a significant bottleneck, limiting productivity and the ability to produce high-value, finished leather [27]. Strategic investment in modern technologies, such as advanced effluent treatment plants and computer-aided design and manufacturing (CAD/CAM) systems for product fabrication, is crucial. Such technological infusion can lead to better resource efficiency, more consistent product quality, and the ability to meet the stringent environmental and design specifications of global buyers [28]. Therefore, fostering this investment through policy incentives and partnerships is essential for the sector's transformation from a producer of semi-processed hides to a creator of high-value finished leather products.

Marketing, Grading and Value Addition

A central pillar for revitalizing the Ethiopian leather sector is the strategic enhancement of its marketing capabilities and value addition. A key proposal under this pillar is to develop a competitive market with fair pricing that rewards higher-quality hides. This approach directly addresses a critical weakness in the current supply chain, where the prevalent practice of averaging prices for hides of varying quality fails to provide economic incentives for farmers and collectors to improve raw material quality at the source. As noted in a comprehensive study on the sector, implementing a grading-based pricing system is essential to break the cycle of poor quality and low returns, thereby encouraging investments in better animal husbandry, flaying techniques, and preservation methods [29,26]. By creating a transparent and competitive market structure that financially rewards quality, the sector can build a stronger foundation for producing high-value finished products capable of competing in international markets.

A core strategy within this pillar is the imperative to "Implement grading systems for hides based on visible quality standards." The absence of a robust, standardized grading system at the raw material stage has been a significant hindrance to the Ethiopian leather industry. As noted in a comprehensive sectoral study, the lack of a transparent and universally applied grading mechanism for hides and skins, based on clear and visible defects, leads to pricing inefficiencies and mistrust between suppliers and tanneries [30]. This inconsistency in raw material quality assessment directly impacts the final product's quality and marketability. Implementing a formal grading system would create a transparent market value, where higher-quality raw materials receive premium prices, thereby incentivizing producers and collectors upstream in the value chain to improve their handling and preservation practices [31].

Furthermore, the establishment of a reliable grading system is a foundational step for value addition. When tanneries can consistently procure raw materials of a known and verified quality, they can better plan their production processes for higher-value finished leathers destined for export markets. This move away from selling low-value semi-processed leather to producing high-quality finished products is a central tenet of the sector's value addition strategy, as highlighted in analyses of the leather value chain [32,33]. Therefore, the implementation of a visible, standards-based grading system is not merely a technical exercise but a fundamental marketing and value addition tool that aligns the entire supply chain towards quality and competitiveness.

A key strategy under this pillar is to promote direct collection and sales immediately after slaughter. This approach is crucial because it addresses a primary cause of quality degradation in the raw material. When hides and skins are not collected and preserved promptly after flaying, they are susceptible to bacterial damage, putrefaction, and poor curing practices, which lead to defects like hair slip, weakness, and poor grain quality. As noted in a sector analysis, "the major cause for the low quality and high rejection rate of Ethiopian hides and skins is the traditional flaying, collection and preservation methods" [34]. By promoting direct collection and sales immediately after slaughter, the supply chain is shortened, ensuring that raw hides and skins are procured and processed with minimal delay. This direct intervention at the very beginning of the value chain is a fundamental step in improving the overall quality, value, and international competitiveness of Ethiopian leather [35].

Marketing, finance and Value addition

A primary challenge hindering the marketing and value addition within the Ethiopian leather sector is the systemic issue of limited access to capital for tanneries and manufacturers. To address this, policy adjustments are critically needed to better support the sector's growth and transition from a raw material exporter to a competitive manufacturer of finished goods [36]. The Ethiopian leather industry has historically been characterized by a focus on exporting semi-processed (crust) and finished leather, with a smaller portion of production dedicated to high-value finished products like footwear, leather goods, and garments [37]. This structure limits the sector's export earnings and its contribution to the national economy. A key barrier to upgrading is the significant financial investment required for modern machinery, effluent treatment plants, and skilled workforce development, which most local tanneries cannot afford.

Current financial policies and the operating environment often fail to provide adequate support. As Gebreeyesus notes, while industrial policies have identified the leather sector as a priority, access to finance remains a "binding constraint," with tanneries facing high-interest rates, complex collateral requirements, and a general credit squeeze from the formal banking system [38]. This lack of capital prevents firms from moving into higher value-added activities, trapping them in competitive, low-margin segments of the global value chain.

Therefore, targeted policy adjustments are essential. These could include:

- Establishing a Specialized Leather Industry Development Fund: The government, in partnership with development finance institutions, could create a dedicated fund offering long-term loans with concessional interest rates specifically for investments in finishing technology, design capabilities, and environmentally compliant infrastructure [39].
- Enhancing Export Financing Mechanisms: While there is no single source that states this exact formulation, the core argument that enhancing export financing mechanisms is critical for export competitiveness is well-supported in the economic literature. Policies aimed at improving access to pre-shipment and post-shipment finance are widely recognized as vital for helping businesses manage cash flow and scale their operations to fulfill larger export orders [40]. For developing economies, the role of a national development bank in streamlining and guaranteeing these processes is often highlighted as a key strategy. As suggested by the World Bank, such public institutions can de-risk the market, thereby mitigating the perceived risks that often prevent commercial banks from lending sufficiently to exporters. This aligns with the broader view that strategic public intervention is crucial for overcoming market failures in trade finance [41].
- Promoting Foreign Direct Investment (FDI) with Technology Transfer Conditions: Encouraging strategic FDI through targeted incentives can bring in not only capital but also the latest technology, management skills, and access to international markets. As argued by Oqubay in the context of industrial policy, such strategic partnerships are crucial for building domestic productive capacity and integrating into global value chains on more favorable terms [42].

Institutional and Policy Support

A foundational pillar for the improvement of the Ethiopian leather sector is institutional and policy support, which includes the critical need to provide targeted training for producers, collectors, and tanners. As emphasized in a key sector analysis, building human resource capacity through such specialized training programs is essential for enhancing technical skills, improving quality standards, and increasing the overall competitiveness of the industry [43].

A critical component of this pillar is the imperative to strengthen collaboration between government agencies, the private sector, and international partners. As noted in a comprehensive study on the sector's development, such multi-stakeholder collaboration is essential for creating a cohesive policy environment, aligning investment with national industrial priorities, and facilitating technology transfer and access to international markets [44].

The other primary focus of this pillar is the need to adjust policies to better support the sector's growth and address issues like access to capital for tanneries. The Ethiopian leather industry has long been hampered by financial constraints. Tanneries, which are capital-intensive operations, face significant challenges in securing loans for upgrading machinery, adopting environmentally compliant waste treatment systems, and financing working capital for raw hide and skin purchases. Existing financial policies often do not cater to the specific needs of the sector. As noted by the UNIDO, "access to finance remains

a critical bottleneck, with high collateral requirements and high interest rates hindering investments in new technologies and compliance with environmental standards" (p. 18) [45]. This lack of capital directly inhibits the sector's ability to move up the value chain.

To address this, policy adjustments are required on multiple fronts. Firstly, there is a need for targeted financial instruments. This could include the establishment of a dedicated credit guarantee scheme for tanneries to reduce the risk for commercial banks and lower collateral requirements [46]. Secondly, fiscal policies such as tax incentives for investments in finished leather and leather product manufacturing can encourage value addition. For instance, allowing accelerated depreciation on imported machinery for finishing and product manufacturing can improve cash flow and incentivize technological upgrades [47]. Furthermore, institutional support must extend beyond finance. This involves strengthening the regulatory framework for quality control and standardization, ensuring that Ethiopian products meet international market requirements. It also requires enhancing the capacity of sector-specific institutions like the Leather Industry Development Institute (LIDI) to provide relevant research, technical training, and market intelligence [48]. A cohesive and well-implemented policy framework, developed in consultation with industry stakeholders, is essential to align the objectives of the government with the practical realities faced by businesses on the ground, thereby unlocking the sector's full potential

Key initiatives for Improvement of the Ethiopian Leather and Leather Products Sector

Training Programs

A key initiative for improving the Ethiopian leather and leather products sector involves the implementation of comprehensive training programs. These programs are designed to enhance skills across the early stages of the value chain, specifically in animal husbandry, slaughtering, flaying, and preservation techniques [49]. As noted in a sector-wide analysis, improving the quality and value of raw hides and skins at this primary production stage is fundamental, as defects acquired here are often irreversible and severely limit the potential for high-value finished products [50]. These training initiatives, often supported by international development partners, aim to educate farmers and workers on best practices to reduce defects and increase the overall quality and yield of raw material entering the manufacturing pipeline.

Modernization of Facilities

The fundamental goal of this initiative is to address quality deficits at the raw material stage, which have historically constrained the sector's ability to produce high-value, export-ready finished leather. As noted in a comprehensive analysis by the United Nations Industrial Development Organization (UNIDO), the Ethiopian leather industry "faces challenges related to the quality of raw hides and skins, which is largely determined by pre-slaughter and post-slaughter conditions" [50]. This directly necessitates the modernization of slaughterhouses and drying sheds to introduce hygienic practices, controlled flaying, and proper curing methods, thereby reducing defects like putrefaction, knife cuts, and brand marks that degrade the raw material.

Furthermore, the modernization drive extends to tanneries, which require technological upgrades to improve efficiency, environmental compliance, and product diversification. The Leather Industry Development Institute (LIDI) of Ethiopia has emphasized that transitioning from the production of semi-processed crust leather to finished leather is critical for capturing greater value in international markets [51]. This shift is impossible without investing in modern machinery for finishing, dyeing, and effluent treatment plants. Supporting this, a study on the sector's competitiveness found that "technological upgrading in Ethiopian tanneries is essential to meet the stringent quality and environmental standards of global buyers" (Gebreeyesus & Mohnen, 2013, p. 14). Therefore, the modernization of facilities is not an isolated action but an integrated strategy to enhance the entire value chain, from the abattoir to the finished leather product, ensuring that the sector can compete globally on quality and sustainability.

Incentive Structures

A key initiative for improving the Ethiopian leather sector involves the strategic use of incentive structures. Specifically, developing price-based incentives to encourage producers to supply high-quality, a well-preserved hide is considered a critical intervention. This approach directly addresses the root cause of poor raw material quality, as the prevailing practice of offering a uniform price regardless of quality provides no motivation for suppliers to invest in better flaying and preservation techniques [52]. By implementing a graded pricing system where higher prices are paid for higher-quality raw materials, the entire value chain can be incentivized to improve from the very first stage of production.

This strategy is supported by sector analyses which indicate that a significant portion of the hide's value is determined at the flaying and immediate post-flaying stages. Therefore, without a direct financial reward for quality, suppliers have little economic reason to change their practices [53]. The introduction of a transparent, quality-linked price premium is thus seen as a fundamental mechanism to align the economic interests of primary suppliers with the quality requirements of tanneries and, ultimately, international buyers.

Value Chain Integration

A central initiative for improving the Ethiopian leather sector is value chain integration, which aims to foster collaboration and communication between all actors in the value chain, from the farm level to the manufacturing industry [54]. This approach is critical because the sector's performance is often hampered by a lack of coordination. As noted in a sector-specific analysis, the disconnect between raw material suppliers, tanneries, and manufacturers leads to inefficiencies, inconsistent quality, and a failure to meet international market requirements [55]. Therefore, by systematically integrating the value chain, the sector can work cohesively to improve the quality and traceability of raw hides and skins, align production with market demands, and enhance the overall competitiveness of Ethiopian leather and leather products on the global stage.

Policy Reform

One of the key initiatives for the improvement of the Ethiopian leather and leather products sector is policy reform, which

involves implementing policy changes that support the sector, such as improving access to capital for tanneries and addressing market quality issues [56].

Quality Management

A central pillar for enhancing the global competitiveness of the Ethiopian leather sector is the rigorous implementation of comprehensive quality management systems and the introduction of formal grading standards. Historically, the sector has been hampered by inconsistent quality, a lack of standardized grading, and poor chemical management, leading to products that often fail to meet the stringent requirements of international markets [57]. To address this, the key initiative focuses on moving beyond mere final product inspection to a holistic approach that embeds quality control throughout the entire production chain. The implementation of comprehensive quality management systems, such as ISO 9001, provides a structured framework for establishing consistent processes, documentation, and continuous improvement protocols. This systemic approach is critical for building a reputation of reliability. As noted in a sector-wide analysis, "the lack of a quality management system in most of the tanneries and manufacturing industries is a bottle neck to produce quality products for the international market" [58].

By adopting these systems, Ethiopian firms can systematically identify and rectify defects at their source from the raw hide and crust stages to finishing and final product assembly thereby reducing waste, increasing efficiency, and ensuring customer satisfaction [59]. Complementing this, the introduction and strict enforcement of clear, scientifically-backed grading standards are paramount. Ethiopian leather has often been downgraded in international markets due to subjective and inconsistent grading, particularly concerning defect types and sizes on raw hides (Gebreeyesus, 2016).

The introduction of a standardized national grading system, aligned with international norms, would provide a common language for suppliers, tanneries, and buyers. This transparency ensures that leather is priced according to its true quality and intended end-use, building trust and facilitating smoother transactions. For instance, a study on the leather industry in Ethiopia found that improving raw material quality through better flaying, preservation, and sorting processes guided by clear standards is a prerequisite for producing higher-value finished leather [60]. Ultimately, the synergy between robust quality management systems and objective grading standards is indispensable. This dual approach directly targets one of the sector's most significant weaknesses, enabling Ethiopian leather and leather products to shift from being perceived as a commodity to a reliable, high-quality component for global fashion, footwear, and goods industries, thereby capturing greater value and ensuring sustainable growth.

Conclusion and Recommendation

Conclusion

In conclusion, the Ethiopian hides and skins sector, while possessing significant potential due to the country's large livestock population, remains constrained by a series of interconnected challenges that undermine its quality, value, and international competitiveness. The core issues identified are systemic, spanning from the initial point of production at the farm level to the final point of export. The primary pillars for improvement must address these critical weaknesses:

- **Pre-Slaughter Quality Degradation:** Widespread practices such as branding, poor handling, overloading, and inadequate veterinary care result in severe skin defects, drastically reducing their value.
- **Post-Slaughter Inefficiencies:** Traditional flaying techniques, lack of immediate preservation (salting), and poor storage conditions at the collection level lead to further damage, putrefaction, and weight loss.
- **Supply Chain and Market Fragmentation:** An inefficient and multi-layered supply chain, dominated by informal actors, limits transparency, fair pricing for pastoralists, and consistent quality control.
- **Policy and Institutional Gaps:** While policies exist, a lack of coordinated enforcement, standardized quality grading, and adequate extension services hinders widespread adoption of best practices.

Therefore, the potential of the sector to become a major source of foreign exchange and rural livelihood improvement remains largely untapped. Addressing these issues is not optional but essential for Ethiopia to transition from a supplier of low-quality raw materials to a producer of high-value, internationally competitive hide and skins.

Recommendations

To overcome the identified challenges and build a robust, high-value hides and skins sector, a multi-stakeholder, coordinated approach is essential. The following initiatives are recommended, structured around key pillars:

Pillar 1: Quality Enhancement at the Source (Pre-Slaughter & Flaying)

- Launch Nationwide Awareness Campaigns: Implement targeted training and extension programs for farmers, pastoralists, and middlemen on proper animal handling, transportation, and the economic impact of skin defects.
- Promote Modern Animal Identification: Replace hot-iron branding with alternative methods like ear-tagging or microchipping to preserve the integrity of the hide/skin.
- Train and Certify Flayers: Establish formal training programs for flayers on proper techniques to minimize cuts and scores, and introduce a certification system for abattoirs and slaughterhouses.

Pillar 2: Post-Slaughter Handling and Preservation

- Subsidize and Distribute Salt: Make affordable, high-quality preservation salt readily available at major collection points and slaughter sites.
- Establish Collection & Curing Centers: Develop a network of well-equipped collection centers in key livestock areas, equipped with facilities for immediate salting, proper drying, and hygienic storage.
- Enforce a "No Cure, No Buy" Policy: Mandate that all hides and skins must be properly cured and preserved before they enter the commercial supply chain.

Pillar 3: Strengthening the Supply Chain and Value Addition

- Facilitate Market Linkages: Develop digital platforms or cooperative models that connect producers directly with tanneries, ensuring better prices and traceability.
- Support Domestic Tanneries: Encourage investment in finishing and manufacturing facilities to move up the value chain from raw/ semi-processed exports to finished leather products (footwear, bags, garments), which capture higher margins.
- Improve Logistics and Infrastructure: Invest in cold chain transportation and warehouse facilities to maintain product quality during transit.

Pillar 4: Enabling Policy and Institutional Framework

- Strengthen and Enforce Quality Standards: The Ethiopian Standards Agency (ESA), in collaboration with the Ministry of Agriculture and trade bodies, must rigorously enforce a standardized national quality grading system with clear price differentials.
- Enhance Coordination: Establish a permanent multi-stakeholder forum involving ministries, research institutions, unions, and exporters to ensure policy coherence and address emerging challenges.
- Provide Financial Incentives: Offer targeted credit facilities or tax incentives for investments in modern flaying equipment, preservation technology, and effluent treatment plants for tanneries.

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