Honey value chain analysis in Ethiopia - an overview

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Abstract

This overview evaluates the opportunities and challenges within the honey value chain in Ethiopia. The primary focus is to analyze the roles of various actors, functions, and service providers involved in the honey value chain, as well as to investigate the determinants affecting honey production volumes and market outlet choices. Ethiopia, endowed with substantial apicultural resources, is a leading honey producer in Africa with the potential to produce up to 500,000 tons annually. Despite this potential, current production is constrained to approximately 50,000 tons, and the commercialization of high-value bee products such as pollen, propolis, and bee venom remains underdeveloped. Key challenges include inadequate trained personnel, limited beekeeping equipment, honey adulteration, insufficient value addition, pests and predators, and a lack of supportive research. Addressing these issues requires coordinated efforts from the government and development partners to enhance training, promote value addition, and implement effective strategies to advance the sector.

Key words: Honey; Value chain; Opportunities; Constraints; Determinant**.**

Introduction

Beekeeping is one of Ethiopia's oldest agricultural practices, supported by a diverse range of flowering plants that provide nectar and pollen essential for honey production (Alemayehu & Hailu, 2021). The country's unique ecological conditions and favorable natural resources have positioned it as Africa's largest honey producer, and it currently ranks among the top honey-producing nations globally. In 2021, Ethiopia produced around 60,000 tons of honey, constituting roughly 30% of Africa's total honey output and around 4% globally (FAOSTAT, 2023). Despite this significant production level, the country operates below its potential of 500,000 tons per year, constrained by low productivity due to reliance on traditional hives, which accounted for 89% of the total honey produced in 2022 (CSA, 2023).

Apiculture is an essential off-farm activity that supports both rural incomes and the national economy, with the sector contributing approximately 1.4% to the agricultural GDP. Honey sales generate approximately 500 million Ethiopian Birr annually, benefiting smallholder farmers and providing job opportunities, particularly for youth and women (Demisew, 2022; Chagwiza, 2023). However, despite this economic significance, the sector remains largely traditional and faces numerous challenges, including limited access to market information, inadequate infrastructure, and an extended supply chain that reduces profitability for smallholder producers (MoA & ILRI, 2022).

In addition to economic contributions, the diverse agro-climatic regions of Ethiopia, which support over 7,000 species of flowering plants, underscore the sector's potential for expansion. Ethiopia is home to Africa's largest bee population, with over 12 million colonies managed by 1.5 to 1.8 million farm households, mostly in traditional beekeeping practices (FAO, 2023). Key honey-producing regions include Oromia, Amhara, and SNNPR, contributing 40%, 25%, and 20% of total production, respectively (CSA, 2022). Yet, due to low commercialization and underdeveloped foreign exchange opportunities, less than 10% of Ethiopia's potential honey and wax output has been realized.

Challenges in the sector include strict export regulations, limited domestic market access, and lack of knowledge on modern honey production techniques. These issues are compounded by difficulties in pest control, quality monitoring, and inadequate laboratory facilities for quality testing (Kebede, 2023). Developing policies and innovations to address these barriers is crucial for enhancing Ethiopia's honey value chain and increasing its role in international markets.

This paper review the honey value chain analysis in Ethiopia with following specific objectives,

1. To review the opportunities and challenges along the honey value chain in Ethiopia.
2. To review honey value chain participants, market share and their role in Ethiopia.
3. To review factors that determines market supply of honey in Ethiopia.
4. To review factors affecting market outlet choice decisions of honey producers in Ethiopia.

According to Abrehet (2015), Bezabih (2010), Biruk et al. (2018), Demisew, (2016), MoA and ILRI (2013), Tezera, (2013), WEEMA, (2016), and Yetimwork (2015), there are numerous challenging situations and opportunities for honey at various levels of the value chain. Mekonen, et al. (2011) discovered that beekeeping may be a fantastic source of employment for rural people in order to reduce poverty and that beekeeping is a significant source of revenue for beekeepers in the district.

From these, the subsequent are the principle one:

Challenges along the Honey Value Chain in Ethiopia

The honey value chain in Ethiopia faces numerous challenges at various stages of production, processing, local marketing, and export. This review synthesizes research findings on these challenges to provide a comprehensive understanding of the constraints hindering the growth and development of the honey industry in Ethiopia.

Production Challenges

Ethiopia's honey production is beset by several significant challenges, including the scarcity of beekeeping systems that make effective use of conventional beehives, the shortage of skilled personnel, and inadequate financial resources. According to Adgaba et al. (2017), the lack of advanced beekeeping systems hinders productivity, as traditional hives are less efficient and yield lower honey volumes. This problem is compounded by a shortage of skilled beekeepers who can adopt and manage modern beekeeping techniques, a situation exacerbated by insufficient training and extension services.

Moreover, the sector is plagued by honeybee pests, predators, and diseases that further reduce honey yields (Tessema & Mekonnen, 2019). The adulteration of honey with sugar, bananas, and other substances is another critical issue, leading to compromised product quality. This adulteration, combined with poor postharvest handling

practices, results in honey that often fails to meet quality standards for further processing and value addition, as noted by Girma & Legesse (2020).

Processing Challenges

In the honey processing stage, the industry faces significant hurdles, including the lack of value addition along the supply chain and inadequate financial resources for investment in honey processing. Gebremichael & Tadesse (2018) highlight that the limited financial capacity of processors prevents them from investing in advanced processing equipment and technologies, which could otherwise enhance the quality and marketability of honey.

Furthermore, there is a noticeable shortage of honey processing skills among workers, which contributes to inefficiencies and quality control issues during processing. The problems extend to the packaging stage, where processors struggle with acquiring a reliable supply of quality packaging materials, such as glass jars, which are crucial for maintaining honey quality during storage and transport (Alemu & Teshome, 2020).

The use of uncontrolled heating systems during processing is another critical issue. Such practices can degrade the quality of honey by destroying its natural enzymes and altering its flavor, making the final product less appealing to consumers and buyers. These processing challenges ultimately limit the ability of Ethiopian honey producers to achieve competitive quality standards, both in domestic and international markets (Mengistu, 2021).

Local Marketplace Challenges

Marketing honey in Ethiopia faces significant challenges due to an underdeveloped market structure, limited domestic demand for processed honey, and insufficient incentives for quality production. These issues are aggravated by inadequate market information, which hampers producers' ability to set competitive prices and expand their reach (Bekele & Eshete, 2017). Transportation infrastructure is another major hurdle, especially for rural beekeepers, as poor road conditions lead to high costs and spoilage during transit (Tadesse, 2019). Furthermore, the honey sector lacks platforms for communication and collaboration, which stifles knowledge-sharing and innovation among industry stakeholders, limiting opportunities for growth (Wolde & Abebe, 2021).

Export Marketplace Challenges

The Ethiopian honey export market faces several hurdles, including widespread illicit trade, minimal promotion in international markets, and difficulties meeting export standards for quality and residue analysis (Gebru & Dereje, 2018; Tegegne & Worku, 2020). Limited links between honey producers and processors further weaken export potential, as many small-scale beekeepers lack access to resources that improve honey quality for export (Kassa, 2021). Additionally, a lack of modern beekeeping practices, skilled labor, and financial resources reduces productivity and honey quality. Processing is hindered by limited investment in packaging and quality control, while both domestic and export markets suffer from infrastructure challenges, inadequate market information, and illicit trade. Addressing these issues requires coordinated action from the government, NGOs, and the private sector to improve training, infrastructure, and market organization to unlock growth opportunities in Ethiopia's honey industry.

Opportunities along the Honey Value Chain in Ethiopia

The honey value chain in Ethiopia presents several opportunities that can potentially transform the sector into a more competitive and profitable industry. By comparing and contrasting various research findings on this topic, a clearer picture emerges of the strengths, potentials, and areas requiring intervention within the honey production, processing, and marketing segments in Ethiopia.

Plentiful Forage Availability and Favorable Agro-Climatic Conditions

Ethiopia's diverse agro-climatic conditions provide an ideal environment for beekeeping, with abundant forage resources allowing for year-round honey production and unique varieties like coffee-flavored honey that are valuable in international markets (Tessema & Mekonnen, 2018; Alemu & Teshome, 2020). However, challenges such as deforestation and land degradation threaten these resources, highlighting the need for sustainable management practices to maintain forage availability and support the long-term growth of the beekeeping sector (Gebremedhin & Berhanu, 2019; Wolde & Abebe, 2021).

Availability of Hive Creation Materials and Indigenous Knowledge

Ethiopian beekeepers benefit from accessible materials for hive construction and a strong foundation of indigenous knowledge, which are essential assets for the sector. Farmers have long used locally available materials like bamboo and mud to construct traditional hives, making beekeeping affordable for rural communities (Adgaba & Tadesse, 2017; Alemu & Teshome, 2020). However, traditional methods often yield lower productivity due to inefficient honey extraction and higher colony loss (Bekele & Eshete, 2017). By combining indigenous knowledge with modern techniques, Ethiopian beekeepers could enhance productivity while preserving valuable cultural practices.

Potential for Diversified Honey Products and Value Addition

The Ethiopian honey sector has substantial potential for diversification and value addition, particularly through the production of specialized honey products like coffee-flavored and fruit-infused honey, which could give Ethiopian honey a unique identity in global markets (Tegegne & Worku, 2020). Such diversification could reduce dependency on volatile commodity prices and help attract premium buyers. However, achieving this requires investment in processing infrastructure, quality control mechanisms, and market development all areas in which Ethiopia currently faces challenges (Gebru & Dereje, 2018; Kassa, 2021). The successful realization of this potential will depend on improved infrastructure, standardization, and collaboration to meet export standards.

Support from Governmental and Nongovernmental Organizations

The support provided by governmental and nongovernmental organizations presents a significant opportunity for Ethiopia's beekeeping sector. These entities play a crucial role in offering training, extension services, and occasionally financial aid to smallholder beekeepers, helping to introduce advanced practices and technologies that enhance honey yields and market access (Tadesse, 2019; Wolde & Abebe, 2021). However, research shows that the impact of these interventions is uneven across regions due to disparities in resource allocation and the varying capacities of local institutions (Girma & Legesse, 2020). This suggests that while external support is valuable, there is a pressing need for equitable resource distribution and capacity-building at the local level to ensure sustainable improvements.

Improved Understanding of Constraints and Opportunities

Finally, research underscores the importance of a comprehensive understanding of the constraints and opportunities in the honey value chain. This understanding has guided the identification of critical areas where intervention is needed, such as the expansion of knowledge-based extension services, the development of marketing structures, and the standardization of products (Gebremedhin & Berhanu, 2019; Adgaba & Tadesse, 2017). These interventions are crucial for ensuring that small-scale beekeepers benefit from the growing demand for honey, both domestically and internationally.

Actors, Market Share, Linkages, and Roles in the Honey Value Chain in Ethiopia

The honey value chain in Ethiopia is characterized by a diverse array of actors, each playing a significant role in the production, processing, and distribution of honey. This review synthesizes key findings from various studies to provide a comprehensive overview of these actors, their market share, linkages, and roles within the Ethiopian honey value chain.

Major Actors in the Honey Value Chain

USAID-AMDe, (2012) study offers a comprehensive overview of Ethiopia's honey value chain, detailing the roles of key actors like input suppliers, small-scale beekeepers, cooperatives, local honey collectors, tej houses, wholesalers, processors, retailers, and exporters. By employing a value chain framework, the study examines how these actors interact and depend on each other for instance; beekeepers rely on input suppliers, while cooperatives help small-scale producers gain market leverage. Local collectors and tej houses bolster the local economy, and wholesalers and processors add value to the product for broader markets. This complex network underscores the need to address inefficiencies in the value chain to enhance profitability for all stakeholders involved.

Market Stages and Actor Roles

Stage 1: Producers (Beekeepers)

Small-scale beekeepers are the backbone of Ethiopia's honey value chain, as highlighted by USAID-AMDe (2012). These producers drive the initial stages of honey production to meet high domestic demand, often classifying honey by color, with white honey generally fetching a higher price. However, beekeepers face challenges, such as supply inconsistency due to traditional beekeeping methods that result in lower yields and varied quality. Packaging in materials like clay pots and plastic containers further impacts product consistency. USAID-AMDe, (2012) emphasize that supporting small-scale producers through improved inputs and training could enhance both the quality and quantity of honey, benefiting the entire value chain.

Stage 2: Direct Buyers of Honey

The second stage of the Ethiopian honey value chain involves direct buyers, such as honey collectors, traders, cooperatives, tej (local drink made from honey mostly popular in Ehtopia) houses, and agribusiness processors, who play a crucial role in aggregating and initially processing honey. According to the USAID-AMDe (2012) report, intense competition exists among buyers to secure high-quality honey in adequate quantities. A significant challenge at this stage is the inconsistent honey supply due to the limited production capacity of small-scale beekeepers. To address this, companies like Beza Mar have implemented vertical integration strategies, establishing their own beekeeping operations to ensure a reliable honey supply. Additionally, cooperatives help improve small-scale

producers' access to larger markets and increase their bargaining power, facilitating the flow of honey through the value chain (USAID-AMDe, 2012).

Stage 3: Agribusiness Corporations and Wholesalers

The third stage of the Ethiopian honey value chain involves agribusiness corporations and wholesalers, particularly those based in Addis Ababa's Mercato, which is the country's largest marketplace. These actors play a crucial role in distributing honey to both domestic and international markets. According to the USAID-AMDe (2012) report, they face challenges in maintaining product quality and consistency, which are essential for competing in both markets. Wholesalers and agribusinesses, by engaging in bulk purchasing and having the infrastructure to process, package, and distribute honey, connect producers to larger markets. However, they face stiff competition both domestically and internationally, as global producers offer competitive prices. The report emphasize the importance of these actors in expanding the market reach of Ethiopian honey, suggesting that improving their efficiency could enhance the competitiveness of Ethiopian honey in global markets (USAID-AMDe, 2012).

Stage 4: Domestic Retailers and Exporters

The final stage of the honey value chain in Ethiopia involves domestic retailers and honey exporters, who are responsible for delivering honey to final consumers both locally and internationally. Retailers compete by offering the best prices, quality, and quantity of honey, while exporters face challenges such as meeting strict quality standards and complying with regulations for international markets. Despite these hurdles, exporters play a vital role in increasing the global visibility of Ethiopian honey. Improving honey quality and marketing strategies is crucial for expanding Ethiopia's market share abroad, which can significantly contribute to the growth of the honey industry (USAID-AMDe, 2012).

Linkages and Market Benefits

The honey value chain in Ethiopia involves various actors, from small-scale beekeepers to exporters, each playing an essential role in production, processing, and distribution. Small-scale producers often rely on cooperatives and intermediaries to access larger markets, which helps aggregate products, improve bargaining power, and connect producers to broader markets (USAID-AMDe, 2012). However, the distribution of benefits is uneven, with beekeepers typically receiving a smaller share of the final product's value. Wholesalers and exporters capture larger portions of the profits, partly due to the risks and costs involved in processing, marketing, and meeting export standards (USAID-AMDe, 2012). Strengthening these linkages, enhancing market access, and supporting value addition could help small-scale producers capture a larger share of the value chain's benefits.

The studies suggest that improving connections between the actors in the honey value chain, coupled with better market access and investments in quality improvements, could boost Ethiopia's honey sector both domestically and internationally (USAID-AMDe, 2012). Strengthening these linkages and addressing the challenges that small-scale producers face would allow them to benefit more from their efforts, thereby making the sector more competitive. This approach could also enhance the sustainability and profitability of Ethiopia's honey industry, ensuring that it reaches its full potential in the global market.

Value-Adding Activities in the Honey Value Chain in Ethiopia

This review synthesizes and compares studies on the value-adding activities within the Ethiopian honey value chain, focusing on various roles and market dynamics. Agonafir (2005) provides a broad framework of the honey value chain, highlighting the importance of activities like transportation, sorting, packaging, filtering, and processing in enhancing honey's market value. Jacobs et al. (2006) expand on this by noting that beekeeping in Ethiopia contributes not only honey and beeswax but also products like pollen and propolis, thus supporting both rural and urban populations. The global significance of honey, noted by Rainer (1996) and Miklyaev et al. (2013-2017), reflects its role in millions of Ethiopian farm households and its contribution to national income.

The studies by Biruk et al. (2018) and Abrehet (2015) emphasize key value-adding activities, such as transportation and sorting. Biruk et al. (2018) describe the use of vehicles, carts, and donkeys for honey transportation, which faces challenges due to limited infrastructure. Abrehet (2015) discusses honey grading and selling based on color, which impacts pricing. Kassa et al. (2018) focus on the role of traders in Kaffa and Sheka zones, managing honey availability and adding value through strategic distribution. Sileshi et al. (2019) underline the contribution of cooperatives in filtering honey and using by-products like beeswax. Local processing by tej brewers, as noted by Ammanuel (2011), contrasts with the large-scale processing and export activities described by Kassa et al. (2018) and WEEMA (2016), where companies meet international standards for global markets. The collective insights from these studies provide a comprehensive view of the diverse methods by which honey's value is enhanced in Ethiopia, blending local and international perspectives on its economic importance.

Contributions of Honey Value Chain Service Providers in Ethiopia

The honey value chain in Ethiopia involves a range of service providers that collectively contribute to the sector's development. These service providers include the Cooperative Organization of Ethiopia (FCA), the Ministry of Cattle and Fisheries, research centers such as the Holeta Beekeeping Research Center, the Ethiopian Apiculture Board (EAB), and various non-governmental organizations (NGOs). This review examines the roles and contributions of these entities in shaping the honey sector in Ethiopia.

a. Cooperative Organization of Ethiopia (FCA)

The Cooperative Organization of Ethiopia (FCA) plays a crucial role in strengthening the honey value chain by assisting in the formation and development of cooperatives. According to Abraham and Negash (2020)**,** FCA provides support in organizing beekeepers into cooperatives, which helps improve their collective bargaining power and access to markets. FCA's involvement includes facilitating market linkages and promoting cooperative development through training and capacity-building initiatives. By consolidating honey production and marketing efforts, FCA enhances the efficiency and effectiveness of the honey value chain.

b. Ministry of Cattle and Fisheries

The Ministry of Cattle and Fisheries is instrumental in supporting the honey sector by fostering the formation of cooperatives and providing technical assistance. As noted by Mulugeta and Assefa (2018)**,** the Ministry not only encourages cooperative development but also educates cooperatives on different honey traits and market demands. This education helps beekeepers produce honey that meets market standards, thereby increasing their competitiveness. Additionally, the Ministry facilitates access to credit from microfinance institutions, which is crucial for improving beekeeping practices and expanding production.

c. Holeta Beekeeping Research Center

The Holeta Beekeeping Research Center, part of the Ethiopian Institute of Agricultural Research, is a key player in advancing honey production through research and development. According to Gizachew and Alemayehu (2016)**,** the center conducts research to identify natural constraints and opportunities within the honey sector. Its work includes developing improved beekeeping practices, enhancing hive management, and addressing pest and disease issues. The research center's findings are vital for informing policy and practice in the honey industry, contributing to both increased production and quality.

d. Ethiopian Apiculture Board (EAB)

The Ethiopian Apiculture Board (EAB) plays a unique role in coordinating various stakeholders within the honey sector. Hussein and Solomon (2019) highlight that the EAB brings together government offices, cooperatives, unions, NGOs, and private sector entities to collaborate on sector development. The Board is also involved in exploring international markets for Ethiopian honey, which helps expand market opportunities for local producers. Through continued financial and technical support from donor agencies, the EAB provides essential services and facilitates the integration of different stakeholders into the honey value chain.

e. Non-Governmental Organizations (NGOs)

NGOs play a crucial role in Ethiopia's honey sector by addressing various gaps in the value chain, focusing on capacity building, technical assistance, and market development. As noted by Tadesse and Berhanu (2021), NGOs are involved in training beekeepers, providing equipment, and improving market linkages, which are essential for boosting both the quantity and quality of honey produced. Their efforts contribute to the sector's competitiveness by enhancing production practices and facilitating better market access. Additionally, organizations such as the Cooperative Organization of Ethiopia, the Ministry of Cattle and Fisheries, the Holeta Beekeeping Research Center, and the Ethiopian Apiculture Board work alongside these NGOs to offer complementary services like technical support, research, and market exploration, all of which play a vital role in improving the efficiency, quality, and sustainability of Ethiopia's honey value chain.

Factors Affecting Farmers' Honey Marketing Participation Decision and Its Level in Ethiopia

Farmers' decisions to participate in honey marketing and the extent of their involvement are shaped by a multitude of factors, including economic constraints, market access, institutional support, and socio-cultural influences. This review synthesizes empirical studies conducted in Ethiopia, which use various models to analyze these determinants and their impact on honey marketing participation and supply levels. The findings underscore the complexity of the honey value chain and the challenges faced by Ethiopian farmers, highlighting the importance of understanding these factors to enhance marketing decisions and improve supply chains.

Economic Constraints

Economic factors are crucial in determining farmers' decisions to engage in honey marketing. Kassa and Abebe (2016) highlight that financial limitations, such as inadequate access to credit and high transaction costs, are significant barriers. Limited access to affordable credit restricts farmers' ability to invest in necessary beekeeping

inputs and technologies. Furthermore, high transaction costs including transportation and processing fees can deter farmers from entering the market or limit their ability to compete effectively.

In addition to financial constraints, Mulugeta and Assefa (2018) point out that low farm income and insufficient savings restrict farmers' capacity to cover marketing-related expenses. This economic vulnerability often leads to a preference for subsistence farming over commercial honey production. These economic barriers are compounded by fluctuating honey prices, which affect farmers' income stability and willingness to invest in honey production.

Market Access and Infrastructure

Access to markets and infrastructure are vital factors influencing honey marketing participation in Ethiopia. Biruk et al. (2019) highlight inadequate infrastructure, such as poor roads and insufficient storage facilities, as key barriers that increase transportation costs and reduce honey quality due to delays and improper storage. This disproportionately affects farmers in remote areas, limiting their market participation. Abraham and Negash (2020) further emphasize that proximity to market hubs plays a crucial role in marketing decisions, with farmers closer to urban centers benefiting from lower transportation costs and better market access. Conversely, farmers in isolated regions face higher costs and limited opportunities, which often discourages their involvement in honey marketing.

Institutional Support and Policies

Institutional support plays a crucial role in influencing farmers' honey marketing decisions. Hussein and Solomon (2019) explain that effective government policies, extension services, and institutional support programs, such as market information dissemination, technical assistance, and subsidies, can significantly enhance farmers' ability to participate in the honey market. The formation of cooperatives and farmer associations, for example, enables collective marketing and improved bargaining power. Tadesse and Berhanu (2021) emphasize that supportive policies, such as improving market infrastructure, providing access to credit, and reducing transaction costs, can further encourage market participation by addressing economic and logistical challenges faced by farmers, thus facilitating greater engagement in honey markets.

Socio-Cultural Factors

Socio-cultural factors also influence farmers' decisions regarding honey marketing. Gizachew and Alemayehu (2016) explore how traditional practices and social norms impact marketing participation. In some communities, traditional farming practices prioritize subsistence over commercial production, which can limit market involvement. Social networks and community support play a significant role in providing market information and resources, affecting farmers' ability to participate in honey marketing.

Kassa et al. (2018) further note that social capital, including community relationships and networks, can facilitate access to market opportunities and resources. Strong social ties can help farmers obtain information about market demand and prices, whereas a lack of social connections can hinder market participation.

Producers Honey Market Participation (Both Decision to & it's Level) in Ethiopia

Various studies on honey marketing in Ethiopia use statistical models to identify factors influencing market participation and supply. Commonly used models include multiple linear regression, Tobit, and Heckman's sample selection models, each offering distinct insights into market dynamics. For example, Kassa Tarekegn (2018) found that beekeeping experience, beehive types, and cooperative membership were positively associated with honey supply in Chena District, while distance to the nearest market negatively impacted honey availability. Similarly, Assefa (2009) identified factors such as education level, extension services, and credit access as key determinants of honey supply in Atsbi Wemberta, with distance to the market serving as a significant barrier. Getachew (2009) and Betselot (2012) employed Heckman's models, emphasizing the role of income, training, beekeeping experience, and access to credit in increasing market supply. Samuel (2014) found that factors like family size, beekeeping training, and previous year's price influenced honey sales in Sodo Zuria.

In addition, Rehima (2006) and Abay (2007) highlighted the importance of market access, extension contacts, and previous year's prices in determining marketable supply. Studies by Melaku et al. (2008) and Omiti et al. (2009) revealed that knowledge, institutional linkages, and marketing information positively affected honey production and marketing decisions. Embaye et al. (2010) confirmed that surplus production drives greater market engagement, while Tezera (2013) and Almaz et al. (2015) pointed out logistical constraints, such as poor infrastructure and market channels, as significant barriers to marketing participation. These studies collectively emphasize the complex interplay of socio-economic, institutional, and logistical factors in honey marketing, underscoring the need for targeted interventions to enhance market access, production capacity, and supply chains. The application of different statistical models provides a comprehensive understanding of the factors at play and highlights areas for potential improvement in Ethiopia's honey sector.

Factors Affecting Producers' Market Outlet Choice Decisions (Preference) in Ethiopia

The decision-making process for producers in selecting market outlets is complex and influenced by multiple factors. This review explores key determinants identified in empirical studies, focusing on the models used to analyze market outlet choices across different regions and commodities. For honey producers in Ethiopia, choosing the right market outlet is crucial, as it directly affects their income and market access. By examining various studies, this article provides insights into the factors that influence honey producers' market outlet decisions and the broader implications for their livelihoods.

Several studies have utilized different statistical models to investigate factors influencing producers' market outlet choices. Bongiwe and Makusha (2012) employed descriptive and multinomial logistic regression analyses to explore these factors. Their study revealed that age, education level, and the quantity of baby corn produced were significant predictors for choosing the NAM Board market channel over other wholesale markets. Additionally, factors such as farmer age, group membership, distance to the market, and marketing agreements influenced the selection of non-wholesale market routes.

Atsbaha (2015) used a multinomial logit model to study honey marketing channels in the Ahferom woreda of Central Tigray. The results indicated that the choice of the collector outlet was significantly affected by average monthly income, previous agreements with buyers, and market information. For the retailer channel, age, beekeeping experience, market information, and distance to the nearest market were significant factors.

In a similar vein, Kifle et al. (2015) applied a multinomial logit regression model to analyze small-scale honey producers' marketing channel choices in Tigray, Ethiopia. Their findings showed that beekeeping experience, market distance, access to market information, grading, and credit access significantly impacted the choice of local market channels. Conversely, household head age, volume of honey sold, average price, and access to market information were significant for trader channel choices.

Several comparative studies have explored factors influencing farmers' market outlet choices across different regions. Djalalou-Dine et al. (2014), Alessandro et al. (2009), and Narayan and Jeffery (2011) used multivariate probit models to identify key socio-economic and logistical factors affecting smallholder farmers' decisions. In Benin, Djalalou-Dine et al. found that education, age, production system, market distance, and incentives played a significant role in market selection. Similarly, Alessandro et al. highlighted education, professional training, market proximity, and agricultural type as determinants for organic farmers in Italy. Narayan and Jeffery, focusing on the Louisiana crawfish industry, emphasized farm size, revenue, and household income. Regional studies in Ethiopia, such as those by Solomon et al. (2016) on coffee, Addisu (2016) on vegetables, and Shewaye (2016) on haricot beans, revealed that factors like farm experience, market distance, education, credit access, and infrastructure (e.g., roads) influence market outlet choices. These studies underline the importance of socio-economic factors and logistical constraints in shaping farmers' marketing decisions across diverse agricultural sectors.

Key Factors Influencing Honey Market Outlet Choice

In Ethiopia, market outlet choices for honey producers are influenced by several key factors, including beekeeping experience, access to market information, proximity to markets, credit availability, previous relationships with buyers, and the producers' education and age. Experienced producers are more likely to choose outlets that provide higher returns or access to niche markets. Timely and accurate market information aids in informed decision-making, while distance to markets impacts whether producers opt for local or more distant outlets. Credit access enables investments in better equipment or higher-cost markets, and past agreements with buyers can guide producers' decisions. Education and age also play a significant role, with higher education levels and older age often associated with more strategic outlet choices. These factors are examined through various statistical models, such as multinomial logit and multivariate probit, which provide valuable insights into these complex decisions and can inform targeted interventions to enhance market access and profitability for honey producers (Solomon et al., 2016; Addisu, 2016; Shewaye, 2016).

Conclusion

The honey value chain in Ethiopia faces challenges such as outdated beekeeping practices, lack of skilled labor, financial constraints, poor quality control, disorganized markets, and inadequate infrastructure. These issues, along with illicit trade practices and limited export promotion, hinder the sector's growth. Overcoming these barriers requires a coordinated approach focusing on training, infrastructure, market organization, and quality control to boost the competitiveness of the honey industry and improve the livelihoods of small-scale beekeepers. Despite these challenges, opportunities exist in Ethiopia's honey value chain due to favorable agro-climatic conditions, abundant forage, indigenous knowledge, and support from various organizations. However, environmental degradation and poor infrastructure remain obstacles. Addressing these, along with improving market integration, standardization, and enhancing productivity, is essential for tapping into the sector's potential. Additionally,

addressing economic, logistical, and socio-cultural factors that influence market participation and outlet choices will improve market access and profitability for honey producers, contributing to sustainable growth.

Recommendations

To address the challenges and opportunities in Ethiopia's honey value chain, key recommendations include investing in modern beekeeping systems through training and financial support, enhancing skilled labor availability via targeted educational programs, and improving financial access for beekeepers. Strengthening quality control mechanisms, upgrading infrastructure, and organizing local markets will reduce logistical challenges and improve market access. Promoting export opportunities, fostering market integration, and addressing environmental challenges are crucial for long-term sustainability. Additionally, respecting socio-cultural factors, improving market information systems, and strengthening institutional support will help producers make informed decisions and enhance their participation in honey marketing, ultimately boosting the competitiveness and growth of the sector.

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