**Business Review and Case Studies, Vol. 6 No. 1, April 2025**
Permalink/DOI: http://dx.doi.org/10.17358/brcs.6.1.1
Available online at http://journal.ipb.ac.id/index.php/brcs

EISSN: 2721-6926

# STRATEGIC BUSINESS DEVELOPMENT FOR HONEY BEE FARMING IN KTH SADAR TANI MUDA FOREST FARMERS GROUP

**Raden Isma Anggraini[1], Mohammad Syamsul Maarif**

School of Business IPB University
Jl. Padjajaran, Bogor 16151, Indonesia

**Article history:**

Received
19 February 2025

Revised
24 February 2025

Accepted
7 March 2025

Available online
1 April 2025



**ABSTRACT**

**Background:** The development of the honey bee business in the Forest Farmer Group (KTH) Sadar Tani Muda has great potential to improve farmer welfare and support environmental sustainability. However, challenges in business management, limited capital, and limited market access are the main obstacles to developing this business. Therefore, an appropriate strategy is needed to optimize the potential of the honey bee business so that it can develop sustainably and be competitive in the market.
**Purpose:** This study aims to identify internal and external factors that play a role in the development of honey bee businesses at KTH Sadar Tani Muda, as well as to formulate strategies for developing honey bee businesses at KTH Sadar Tani Muda.
**Design/Methodology/approach:** This study uses a descriptive method with qualitative and quantitative approaches. The number of respondents was 9 people, consisting of 6 internal respondents and 3 external respondents. The analysis techniques used are SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis, Internal Factor Analysis Summary (IFAS) matrix and External Factor Analysis Summary (EFAS) matrix to measure internal and external factors that influence the development of honey bee businesses, and the QSPM matrix.
**Finding/Result:** This study found that the honey bee business in KTH Sadar Tani Muda has great potential in improving farmer welfare and supporting environmental sustainability. The main strength factors in the development of this business are the availability of supporting natural resources, high market demand for natural honey, and an organizational culture based on mutual cooperation and innovation. KTH Sadar Tani Muda has also implemented digital marketing and has a fairly extensive partnership network. This study also identified several major challenges faced, such as limited capital, low managerial skills of farmers, and limited market access. From the external side, great opportunities come from the trend of natural product consumption and government support for social forestry, while the main threats come from market competition with imported honey, fluctuations in honey prices, and climate change that can affect honeybee productivity.
**Conclusion:** The development of honey bee business in KTH Sadar Tani Muda can be improved by implementing strategies based on internal advantages and utilizing external opportunities. Support from various parties, innovation in business management, and the use of digital marketing technology are key factors in increasing the competitiveness and sustainability of this business.
**Originality/Value (State of The Art):** This study is the first study to use SWOT analysis and the IFAS-EFAS Matrix in formulating a honey bee business development strategy at KTH Sadar Tani Muda, with a focus on strengthening farmer capacity and optimizing digital-based marketing to increase product competitiveness in the market.

**Keywords:** strategic business development, honey bee farming, SWOT analysis, forest farmers group

**How to cite:**
Anggraini R. I., & Maarif M. S. (2025). Strategic business development for honey bee farming in KTH Sadar Tani Muda Forest Farmers Group. Business Review and Case Studies, 6(1), 1. https://doi.org/10.17358/brcs.6.1.1

[1] Corresponding author:
Email: isma.anggraini@apps.ipb.ac.id

## INTRODUCTION

Indonesia has great potential in developing honey bee cultivation, considering that the forest area reaches 125.8 million hectares (Reflis et al. 2022). Honey bee cultivation has great economic potential because it contributes significantly to family income, improves farmer welfare, creates jobs, improves the welfare of rural communities and plays an important role in environmental conservation (Adgaba et al. 2014). Forest honey is a non-timber forest product (NTFP) that has high economic value and has the potential to improve the welfare of communities around the forest (Airlangga et al. 2023; Hastari and Yulianti, 2018). Forest Farmer Groups (KTH) play an important role in the management and utilization of forest honey. These farmer groups play a role in ensuring quality standards and sustainable management of forest honey (Aini et al. 2019). The involvement of KTH has a positive impact on honey production and improves agricultural practices (Aini et al. 2019; Resinta et al. 2024).

The rapid advancement of digital technology and e-commerce platforms provides a new opportunity for small-scale honey producers to strengthen their market presence and increase sales. However, many honey farmers still rely on traditional marketing methods and have yet to adopt digital strategies effectively. Moreover, climate change, fluctuating honey prices, and stringent product certification regulations create additional obstacles for honey bee farming businesses. These challenges highlight the need for a structured and strategic approach to business development that optimizes internal strengths while addressing external threats. By developing comprehensive strategies that integrate business innovation, digital marketing, and sustainable beekeeping practices, honey farmers can enhance their competitiveness and ensure long-term business sustainability. This study aims to analyze the internal and external factors influencing honey bee farming businesses and propose strategic solutions to support their growth and resilience in an increasingly competitive market.

The study on the strategic development of honey bee farming at KTH Sadar Tani Muda presents a novel approach to enhancing the sustainability and competitiveness of the forest honey industry. While previous research has explored the economic potential of honey beekeeping and the role of Forest Farmer Groups (KTH) in managing non-timber forest products (Adgaba et al. 2014; Aini et al. 2019), most studies have focused on specific aspects such as production techniques, economic impact, or marketing challenges. However, they lack an integrated strategic framework that combines internal and external factors to support the sustainable growth of honey bee businesses. Several past studies have highlighted the significant economic contributions of honey bee farming to rural development and farmer income (Adgaba et al. 2014). Additionally, KTH plays a crucial role in ensuring honey quality control and sustainability, benefiting both conservation efforts and local economies (Aini et al. 2019). However, significant challenges remain, including limited access to modern retail markets, lack of product certification, and competition with cheaper imported honey, which restricts the competitiveness of local honey producers (Harianja et al. 2023). Furthermore, the adoption of technology and digital marketing remains limited, making it difficult for small-scale honey farmers to expand their market reach (Mila et al. 2024). While previous research has examined these issues individually, no study has combined a comprehensive strategic analysis to develop a sustainable honey bee business model.

This research contributes to the field by developing a strategic framework using SWOT, IFAS-EFAS, and QSPM analysis to identify and prioritize the most effective business strategies for honey bee farming. Unlike previous studies that primarily describe industry challenges, this research quantifies strategic options, allowing for data-driven decision-making. Additionally, this study emphasizes digital transformation in beekeeping, where the optimization of digital marketing and e-commerce is considered crucial for expanding market reach and improving competitiveness (Mila et al. 2024). By implementing these strategies, small-scale honey farmers can increase product visibility, strengthen branding, and adopt more efficient marketing strategies.

Beyond the business perspective, this research also links honey bee farm development with environmental sustainability. Given the threats of climate change and pesticide use, which can significantly impact bee populations (Yudianti et al. 2023), this study proposes ecosystem conservation strategies and climate-adaptive beekeeping techniques. This provides a new dimension to honey bee research, ensuring that

beekeeping practices are not only profitable but also environmentally sustainable. From a managerial perspective, this research introduces a more adaptive approach for small-scale farmer groups, differentiating it from studies that focus on large-scale commercial honey production. By emphasizing managerial capacity building, digital financial management systems, and efficient supply chain management, this study offers practical solutions for KTH Sadar Tani Muda to enhance its business operations and competitiveness. Additionally, it highlights regulatory and certification barriers, which often hinder small honey producers from entering large retail markets (Harianja et al. 2023). Therefore, this study proposes strategies to overcome these regulatory constraints, including collaborations with academic institutions and research centers to support innovation in honey production and product development.

Thus, this research presents several key advancements compared to previous studies. Firstly, it integrates SWOT, IFAS-EFAS, and QSPM analysis, offering a systematic and measurable approach to business strategy formulation. Secondly, it incorporates digitalization and technological innovation, aspects that have been underexplored in small-scale honey bee business research. Thirdly, it addresses environmental sustainability and climate adaptation, which are crucial for the long-term viability of forest-based honey production. By combining strategic, economic, and ecological perspectives, this research provides a significant contribution to the development of the honey bee business while offering practical recommendations for farmers and stakeholders to enhance competitiveness and sustainability in Indonesia's honey industry. This study offers a novel approach by integrating SWOT analysis with the IFAS-EFAS matrix to formulate a comprehensive business development strategy specifically for forest honey production. Unlike previous studies, this research places a strong emphasis on digital marketing, product diversification, and the role of farmer capacity building in enhancing competitiveness and sustainability.

KTH Sadar Tani Muda was chosen for this study because it is an active and well-established forest farmer group in Bojongmurni Village, Ciawi District, Bogor Regency, with experience in honey bee cultivation. The group has achieved notable success, including winning first place in the West Java Provincial Level Wana Lestari Competition for the Forest Farmer Group (KTH) category in 2022. Additionally, KTH Sadar Tani Muda not only focuses on honey bee farming but also engages in agroforestry, environmental services, and livestock businesses, making it an ideal case study for understanding the potential and challenges of forest honey production within a diversified rural economy. Its dedication to sustainability, innovation, and community empowerment further reinforces its relevance as a research subject.

KTH Sadar Tani Muda, located in Bojongmurni Village, Ciawi District, Bogor Regency, is a forest farmer group that has a honey bee business in addition to other businesses, namely agroforestry, environmental services and livestock. Referring to the Economic Transaction Value (NTE) Report of KTH Sadar Tani Muda in 2024, the honey bee business contributed 33.50% of the total income of farmers (Table 1). This shows that this business has a significant role in the economy of KTH Sadar Tani Muda farmers, although it is not the largest source of income when compared to the agro, environmental services, and livestock sectors, the forest honey business remains the main source for many farmers.

The contribution of forest honey is quite large, but it can still be increased through better management and business strategies. If developed more optimally, forest honey can become a more dominant source of income and improve farmer welfare. With the income contribution still below other sectors, there are possible obstacles in the production, marketing, or management of the forest honey business that need to be analyzed further. Competition with other honey products, both from forests and livestock bee cultivation, can be a threat to the development of the forest honey business. Based on the considerable potential in the honey bee business managed by KTH Sadar Tani Muda, proper business development is needed so that it can continue to grow and help the economy of the surrounding community while maintaining the sustainability of the forest.

This study aims to identify internal and external factors that play a role in the development of the honey bee business at KTH Sadar Tani Muda, as well as to formulate a strategy for developing the honey bee business at KTH Sadar Tani Muda.

Table 1, Contribution of income of KTH Sadar Tani Muda in 2024

| Source of Income | Average Farmer Income (Rp/Person/Year) | Farmer's Income Contribution (%) |
|---|---|---|
| Honey Bee | 7,686,000 | 33.50 |
| Others HHBK | 1,192,000 | 5.19 |
| Agroforestry, environmental services and livestock | 14,068,000 | 61.31 |
| Total | 22,946,000 | 100.00 |

## METHODS

The research was conducted at KTH Sadar Tani Muda located in Bojong Murni Village, Ciawi District, Bogor Regency. The research location was chosen considering that KTH Sadar Tani Muda is a KTH that is active in forest honey production. Another consideration is that KTH Sadar Tani Muda has achievements, namely as the 1st Place winner of the West Java Provincial Level Wana Lestari Competition for the 2022 Forest Farmer Group (KTH) category. The research was conducted from November 2024 to January 2025.

This study utilizes both primary data and secondary data to analyze the development of the honey bee business. Primary data were collected through in-depth interviews with selected respondents and field observations to gain direct insights into the honey bee farming practices. Secondary data were gathered from various literature sources relevant to the research topic, including academic journals, reports, and previous studies that provide contextual background on honey bee farming, business strategies, and market dynamics.

The study employed a non-probability sampling method, specifically purposive sampling, to select respondents based on their relevance to the research objectives. The respondents were categorized into internal respondents and external respondents, totaling nine individuals. Internal respondents (six people) included those directly involved in the honey bee business, such as KTH administrators (the KTH Chairperson) and KTH members (farmers or forest honey collectors). These respondents provided insights into the internal conditions of the honey bee business, highlighting its strengths and weaknesses. External respondents (three people) comprised field extension workers, academics, and consumers. These respondents, though not directly involved in KTH operations, contributed valuable perspectives on external factors influencing honey bee business development, such as market trends, policy regulations, and competitive challenges. The combination of internal and external perspectives enabled a comprehensive assessment of both internal business conditions and external market opportunities and threats.

The data processing and analysis techniques in this study used SWOT (strengths, weaknesses, opportunities, and threats) analysis, IFAS (Internal Factor Analysis Summary) and EFAS (External Factor Analysis Summary) matrixs to measure internal and external factors that influence the development of honey bee businesses. SWOT analysis was chosen because it is an effective strategic tool to identify key business challenges and formulate appropriate development strategies (David, 2011). It provides a systematic framework to understand potential, challenges, and best strategies for business growth (Gurel & Tat, 2017). SWOT analysis was chosen as the primary analytical tool in this study because it provides a comprehensive yet practical framework for evaluating both internal (strengths and weaknesses) and external (opportunities and threats) factors affecting the honey bee business at KTH Sadar Tani Muda. Unlike complex financial models, SWOT is adaptable to small and medium-scale enterprises (SMEs), making it particularly useful for community-based businesses where qualitative and strategic assessments are more relevant. It offers flexibility in strategy development, allowing for the identification of various alternatives to improve business operations, marketing, and competitiveness. Additionally, the integration of IFAS and EFAS matrices enhances the objectivity of SWOT by assigning quantitative values to key factors, ensuring a more structured and data-driven approach. Given the nature of the honey bee business, which relies on natural resources, market trends, and external regulations, SWOT effectively captures both operational challenges and market opportunities, making it the most suitable tool for formulating practical and sustainable development strategies.

The research framework follows a structured approach: (1) Identifying internal and external factors affecting the honey bee business at KTH Sadar Tani Muda through field observations, interviews, and literature reviews; (2) Analyzing internal and external factors using the IFAS and EFAS matrices to determine key strengths, weaknesses, opportunities, and threats; (3) Developing a SWOT matrix to formulate alternative business strategies; (4) Applying the Quantitative Strategic Planning Matrix (QSPM) to determine the most effective strategic priorities; and (5) Providing managerial implications and recommendations based on the analysis to enhance the competitiveness and sustainability of the honey bee business. The research framework for the Development Strategy of the Honey Bee Business at KTH Sadar Tani Muda can be seen in Figure 1.

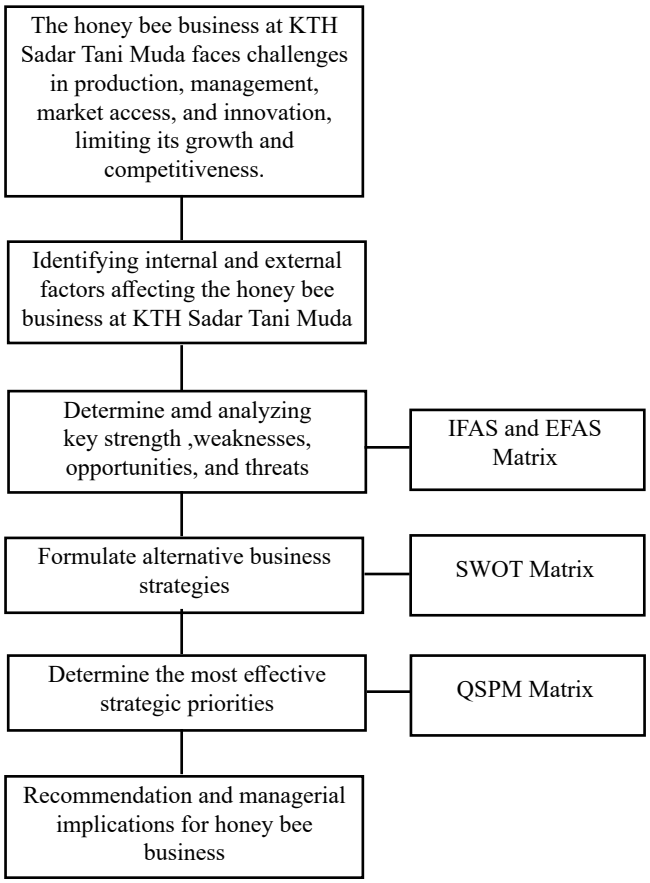


Figure 1. Research framework

The IFAS matrix is used to identify and evaluate internal factors that affect the forest honey business, namely strengths and weaknesses. The EFAS matrix is used to identify and analyze external factors that can affect the forest honey business, namely opportunities and threats. The next step is to use the SWOT matrix to formulate a forest honey business development strategy based on the results of IFAS and EFAS. The last step is to use the Quantitative Strategic Planning Matrix (QSPM) matrix used to select the best strategy from several alternatives generated by SWOT (David 2011; Gupta el al., 2015).

## RESULTS

### Profile of KTH Sadar Tani Muda

The Forest Farmer Group (KTH) Sadar Tani Muda is domiciled in Kampung Bojong RT 11 RW 01 Bojongmurni Village, Ciawi District, Bogor Regency, West Java. KTH Sadar Tani Muda has 25 members and mentors 30 members of the community group working in the protected forest area of Mount Pangrango. The types of businesses developed are Trigona Leaviceps and Apis Cerana honey bee cultivation. Other types of businesses developed include agroforestry, red ginger processing cultivation, essential oils, environmental services, honey bee educational tourism and agriculture. This group was formed with the aim of improving the welfare of local communities through sustainable utilization of forest resources, especially in forest honey production. The formation of this group began with the awareness of young farmers of the importance of preserving forest ecosystems and the need for a conservation-based business model that still provides economic value to the community (Sadar Tani Muda, 2022).

### Internal Environmental Analysis of KTH Sadar Tani Muda

Internal environmental analysis aims to identify and analyze the strengths and weaknesses that affect the forest honey business at KTH Sadra Tani Muda. This step is important in compiling the IFAS matrix as part of the SWOT analysis.

**Organizational Structure**

KTH Sadar Tani Muda has a clear division of tasks in managing honey bee products, with special roles in the fields of production, marketing, and management of beekeeping areas. However, strengthening is still needed in the operational and marketing sectors, especially in increasing production efficiency and expanding the distribution of honey products to a wider market.

The structured organizational model observed in KTH Sadar Tani Muda aligns with the findings of Aini et al. (2019), who highlighted that forest farmer groups (KTHs) with clear role divisions tend to have better honey production systems and quality control mechanisms. However, unlike previous studies that focus primarily on honey collection and quality assurance, this research further emphasizes the need for strengthening operational and marketing strategies, particularly in digital marketing and retail expansion. Similarly, Harianja et al. (2023) found that many forest honey farmer groups struggle with marketing and distribution due to weak organizational structures. In contrast, KTH Sadar Tani Muda already has a structured system in place, making it better positioned to scale its business. However, our study suggests that greater investment in marketing expertise, technology adoption, and retail partnerships could further enhance market access, a dimension that previous research has not extensively addressed.

**Organizational Culture**

KTH Sadar Tani Muda has implemented a culture of mutual cooperation, innovation, and sustainability in honey bee cultivation efforts, where members actively contribute to beekeeping and product processing. In addition, there is a spirit of education and empowerment, which is seen from the group's involvement in beekeeping training and dissemination of knowledge to the community to increase awareness of the benefits of honey bees.

**Organizational Resources**

KTH Sadar Tani Muda's resources include: marketing, finance, operations, human resources, and information technology.

Marketing

KTH Sadar Tani Muda's honey products have been marketed through social media (Instagram, Facebook, YouTube) and various exhibitions and partnerships with beekeeping communities. However, digital marketing strategies and access to modern retail markets still need to be strengthened to increase sales and customer reach. The marketing strategies of KTH Sadar Tani Muda, which involve the use of social media platforms (Instagram, Facebook, YouTube) and participation in exhibitions and partnerships, align with the findings of Mila et al. (2024). Their study emphasized that digital marketing plays a crucial role in expanding honey market reach and brand awareness. However, while Mila et al. (2024) focused on the general benefits of digital marketing, our study identifies specific gaps in modern retail access and e-commerce integration, which still require further development to enhance market penetration and sales efficiency.

Finance

Income from the honey bee cultivation business comes from the sale of honey and its derivative products such as herbal drinks and powdered honey, as well as income from beekeeping education services. However, business development still requires additional investment to increase production scale and operational efficiency. KTH Sadar Tani Muda generates income through honey sales, derivative products (herbal drinks, powdered honey), and beekeeping education services. This finding is consistent with Harianja et al. (2023), who noted that honey bee businesses in Indonesia increasingly rely on diversified income streams beyond raw honey sales. However, unlike previous studies, our research highlights the pressing need for additional investment to scale production and improve operational efficiency, which remains a major challenge for small-scale honey producers.

Operations

KTH Sadar Tani Muda has Trigona and Apis cerana honey bee cultivation with more than 650 hives, which produce quality honey sustainably. The challenge is the limited production equipment, such as honey extractor machines and post-harvest facilities that can increase production capacity and product quality. KTH Sadar Tani Muda cultivates Trigona and Apis cerana honey bees with over 650 hives, producing high-quality

honey sustainably. However, the limited production equipment (such as honey extractors and post-harvest facilities) presents challenges. This aligns with Aini et al. (2019), who found that many forest honey producers lack modern harvesting tools, affecting efficiency and product quality. However, our study uniquely emphasizes the need for technological adoption, such as dehumidifiers and vacuum sealers, to improve honey storage and quality retention, an aspect not widely covered in previous literature.

Research and Development

KTH Sadar Tani Muda has conducted research and development (R&D) on honey bee cultivation by exploring Trigona leaviceps and Apis cerana maintenance techniques to improve honey productivity and quality. In addition, this group also develops derivative products such as herbal drinks and powdered honey, and utilizes simple technologies such as dehumidifiers and vacuum sealers to maintain product quality and durability.

Human Resources

Group members have experience in bee cultivation and honey production, and are active in educating and training the community. However, skills improvement is still needed in honey processing techniques, product certification, and marketing and distribution strategies to increase competitiveness in a wider market. In human resources, while KTH members have extensive experience in honey bee cultivation, there is still a need for skills improvement in honey processing techniques, product certification, and marketing strategies. This finding is in line with Mulasih et al. (2024), who highlighted that the lack of managerial and technical training remains a bottleneck for small-scale honey producers. However, our study expands on this by suggesting targeted training programs in product certification and digital marketing to enhance competitiveness in premium markets.

Information Technology

KTH has used social media and digital platforms for beekeeping promotion and education, which helps increase product visibility. However, the use of e-commerce, digital recording systems, and post-harvest technologies such as dehumidifiers and honey filters can still be improved to support product quality and marketability. KTH Sadar Tani Muda has made progress in leveraging social media for promotion and education. However, e-commerce integration, digital financial management, and advanced post-harvest technologies remain underdeveloped. This is consistent with Samargahandian et al. (2017), who found that small-scale honey producers often lag in adopting digital tools due to lack of infrastructure and training. Our research builds on this by recommending greater adoption of IT-based financial recording systems and online sales platforms to increase efficiency and marketability.

**IFAS Matrix of Honey Bee Business at KTH Sadar Tani Muda**

Based on the results of the analysis of the IFAS matrix, a total score of 2.91 was obtained (Table 2). The IFAS matrix table shows that the internal factors of strength that play a dominant role in the honey bee business at KTH Sadar Tani Muda are clear division of tasks, quality honey products, good organizational culture, experience in honey bee cultivation and already having a partnership network. The dominant weaknesses in honey bee cultivation at KTH Sadar Tani Muda include the marketing and operational divisions that are not yet optimal, limited access to modern retail markets, simple post-harvest honey facilities, and the absence of product certification.

The IFAS matrix analysis, which resulted in a total score of 2.91, highlights the dominant internal strengths of KTH Sadar Tani Muda, including a clear division of tasks, quality honey products, strong organizational culture, experience in honey bee cultivation, and an established partnership network. These findings align with Aini et al. (2019), who emphasized that well-structured forest farmer groups (KTHs) with organized roles and strong community cooperation contribute to improved honey production and quality control. However, unlike previous studies that primarily focus on the role of farmer groups in production efficiency, this study expands on the importance of partnerships and business networking in enhancing competitiveness and sustainability. Regarding weaknesses, this study identifies marketing and operational inefficiencies, limited access to modern retail markets, inadequate post-harvest facilities, and the lack of product certification as significant constraints. These challenges are consistent with Harianja et al. (2023), who found that many small-scale honey producers struggle with supply chain limitations and lack formal certifications,

restricting their access to premium markets. However, unlike previous research, which primarily discusses market barriers in general terms, this study provides a more detailed analysis by linking weaknesses to specific business aspects such as post-harvest handling and modern retail integration, highlighting the need for investment in production technology and certification processes to improve competitiveness.

**External Environmental Analysis of KTH Sadar Tani Muda**

External environmental analysis aims to identify and analyze the opportunity and threat factors that affect the forest honey business at KTH Sadar Tani Muda. This step is important in compiling the EFAS matrix as part of the SWOT analysis.

**Economy**

The demand for natural honey is increasing, especially due to the healthy lifestyle trend that encourages the consumption of organic and natural products (Samargahandian et al. 2017). Fluctuations in honey prices in the market can affect the income of farmer groups, especially if there is competition from cheaper imported honey. The increasing demand for natural honey due to a healthy lifestyle trend (Samargahandian et al. 2017) aligns with the findings of Wildiana et al. (2022), who also identified a growing market for natural and organic honey as a substitute for processed sweeteners. However, our study expands on this by highlighting how price fluctuations and imported honey competition specifically affect the income of local honey farmers, an issue that is not widely discussed in prior research.

Table 2. IFAS Matrix of Honey Bee Business at KTH Sadar Tani Muda

| Internal Factors | Weight | Rating | Score |
|---|---|---|---|
| **Strenght** | | | |
| Having a clear division of tasks in production, marketing, and management of the beekeeping area. | 0.085 | 4 | 0.34 |
| Having a culture of mutual cooperation, innovation, and sustainability in the honey bee cultivation business. | 0.068 | 4 | 0.27 |
| Already has a partnership network with the beekeeping community and often participates in product exhibitions. | 0.076 | 3 | 0.23 |
| Has a source of income from the sale of honey and its derivative products (herbal drinks, powdered honey, etc.) as well as educational services. | 0.059 | 3 | 0.18 |
| Has more than 650 Trigona and Apis cerana bee hives, which produce quality honey continuously. | 0.085 | 4 | 0.34 |
| Implements simple technology in the form of dehumidifiers and vacuum sealers to improve product quality. | 0.059 | 3 | 0.18 |
| KTH members are experienced in beekeeping and honey production, and are active in education and training. | 0.068 | 4 | 0.27 |
| Already using social media and digital platforms (IG, FB and Youtube) for beekeeping promotion and education. | 0.051 | 3 | 0.15 |
| Total | 0.550 | | 1.96 |
| **Weakness** | | | |
| The organizational structure is not optimal in the operational and marketing sections | 0.081 | 2 | 0.16 |
| Limited access to modern retail markets | 0.072 | 2 | 0.14 |
| Additional investment is still needed, especially to increase production and post-harvest facilities. | 0.063 | 2 | 0.13 |
| Post-harvest facilities such as honey filters and packaging are still simple | 0.072 | 2 | 0.14 |
| Do not have research collaborations with academic institutions or research institutions for the development of honey product innovations. | 0.063 | 2 | 0.13 |
| Do not have product certification | 0.072 | 2 | 0.14 |
| Financial recording and stock management are still manual (not utilizing IT) | 0.054 | 2 | 0.11 |
| Total | 0.450 | | 0.95 |
| Grand Total | 1 | | 2.91 |

**Social, Cultural, and Environmental**

Currently, society is increasingly aware of the benefits of natural honey as an alternative healthy sweetener, driving greater market potential (Wildiana et al. 2022). Sustainable honey bee farming practices can help maintain the balance of forest ecosystems, supporting the preservation of biodiversity (Harjanto et al. 2020). However, the threat of climate change and the use of pesticides around plantation areas can significantly reduce bee populations and honey production (Yudianti et al. 2023). The importance of sustainable honey bee farming in maintaining forest ecosystems and biodiversity (Harjanto et al. 2020) is in line with the study by Harianja et al. (2023), which emphasized that social forestry programs help protect natural resources while supporting rural economies. However, while Harianja et al. (2023) focus on the macro impact of social forestry, our study uniquely discusses the direct threats of climate change and pesticide use on honey production and bee populations, providing a more localized and industry-specific perspective.

**Politics, Governance, and Law**

The Indonesian government supports beekeeping efforts through social forestry programs and assistance to forest farmers, including honey bee farmer groups (Harianja et al. 2023). Current policies on product certification and food safety standards can be a challenge for beekeepers looking to expand their market to modern retail. Regulations on forest management and environmental protection can impact farmer groups' access to ideal bee breeding sites (Suparno et al. 2018). However, unlike previous research, our study highlights the specific regulatory challenges faced by small-scale honey producers, particularly in product certification and food safety compliance, which hinder their ability to penetrate modern retail markets.

**Technology**

Modern beekeeping technologies, such as innovation-based beehives and harvesting methods without damaging the hive, can increase production efficiency. Digital marketing through e-commerce and social media provides great opportunities to reach a wider market without having to rely on traditional distributors (Mila et al. 2024). Lack of access to training and sophisticated technological tools is an obstacle for farmer groups that still use traditional methods (Mulasih et al. 2024). Our research further builds on this by emphasizing the need for digital marketing, e-commerce expansion, and the adoption of digital record-keeping systems, which were not fully explored in previous studies.

**Competition**

Competition with modern beekeeping technology, such as innovation-based beehives and harvesting methods without damaging the hive, can increase production efficiency. Digital marketing through e-commerce and social media provides a great opportunity to reach a wider market without having to rely on traditional distributors. Lack of access to training and sophisticated technological tools is an obstacle for farmer groups that still use traditional methods.

Large honey producers and cheaper imported honey are challenges for farmer groups in selling their products in local and national markets. The presence of fake or mixed honey in the market creates consumer distrust, so there needs to be education and a strong branding strategy to distinguish real honey. Collaboration with beekeeping communities and organic certification can be strategies to increase competitiveness and penetrate the premium market. The dominance of large honey producers and imported honey in the market, along with the prevalence of fake or adulterated honey, was previously discussed in Resinta et al. (2024). However, while Resinta et al. (2024) mainly focused on market challenges, our study offers concrete strategies, such as collaborations with beekeeping communities, organic certification, and branding education, to differentiate forest honey from counterfeit products.

**EFAS Matrix of Honey Bee Business at KTH Sadar Tani Muda**

The EFAS matrix is the result of an analysis of the external environment in terms of opportunities with a total of 7 factors and in terms of threats with a total of 7 factors. The EFAS matrix is presented in Table 3. The results of the EFAS matrix analysis with a total score of 3.32 indicate that from external factors, namely the dominant opportunities of several factors are the increasing demand for natural honey due to healthy lifestyle trends, government support through social forestry programs and assistance for honey bee farmers and increasing public awareness of natural and organic products. The existence of these opportunities provides benefits for KTH Sadar Tani Muda in cultivating honey

bees. The dominant threat factors include fluctuations in honey prices due to competition with cheaper imported honey, limited access to modern retail markets and the use of pesticides in the surrounding agricultural areas that can endanger the bee population. The existence of threat factors for bee farmers can affect the development of the honey bee business.

**Internal-External (IE) Matrix**

The results of the IFAS matrix and EFAS matrix calculations are used to compile an internal-external matrix. The goal is to obtain a good business strategy so that the position of the honey bee business in KTH Sadar Tani Muda can be known. The internal-external matrix is divided into 9 cells as presented in Figure 2. The total score of the IFAS matrix is 2.91 and the total score of the EFAS matrix is 3.32. The internal and external matrices show that the honey bee business of KTH Sadar Tani Muda is in cell II, namely Growth (Figure 2). Placing a position in cell II, the form of strategy carried out is a growth strategy through horizontal integration, an activity to expand the company. KTH Sadar Tani Muda which is in Cell II has a great opportunity to grow because of supportive external conditions. However, because its internal conditions are still in the average category, the company needs to strengthen internal aspects in order to fully utilize existing opportunities. The main focus is expansion and increasing internal competitiveness. The total score of the IFAS matrix is 2.91 and the total score of the EFAS matrix is 3.32. The internal and external matrices show that the honey bee business of KTH Sadar Tani Muda is in cell II, namely Growth (Figure 2). Placing a position in cell II, the form of strategy carried out is a growth strategy through horizontal integration, an activity to expand the company. KTH Sadar Tani Muda which is in Cell II has a great opportunity to grow because of supportive external conditions. However, because its internal conditions are still in the average category, the company needs to strengthen internal aspects in order to fully utilize existing opportunities. The main focus is expansion and increasing internal competitivene.

Table 3. IFAS Matrix of Honey Bee Business at KTH Sadar Tani Muda

| External Factors | Weight | Rating | Skor |
|---|---|---|---|
| **Opportunities** | | | |
| Increasing demand for natural honey due to healthy lifestyle trends | 0.09 | 4 | 0.36 |
| Government support through social forestry programs and assistance to honey bee farmers | 0.075 | 3 | 0.225 |
| Digital marketing and e-commerce expand market reach | 0.07 | 4 | 0.28 |
| Export potential and premium market for high-quality organic honey | 0.065 | 3 | 0.195 |
| Innovation in beekeeping technology increases production efficiency | 0.06 | 3 | 0.18 |
| Increased public awareness of natural and organic products | 0.075 | 3 | 0.225 |
| Collaboration with beekeeping communities and organic certification to increase competitiveness | 0.065 | 3 | 0.195 |
| Total | 0.5 | | 1.66 |
| **Threat** | | | |
| Fluctuations in honey prices due to competition with cheaper imported honey | 0.085 | 4 | 0.34 |
| Climate change impacting the availability of bee food sources and honey production | 0.08 | 4 | 0.32 |
| Pesticide use in surrounding agricultural areas that can harm bee populations | 0.075 | 3 | 0.225 |
| Strict certification regulations and food safety standards are barriers for small businesses | 0.07 | 3 | 0.21 |
| Lack of access to modern technology and training to increase honey production | 0.07 | 3 | 0.21 |
| Market dominance by large honey producers with stronger distribution networks | 0.06 | 3 | 0.18 |
| Presence of fake or adulterated honey that creates consumer distrust of real honey | 0.06 | 3 | 0.18 |
| Total | 0.5 | | 1.66 |
| Grand Total | 1 | | 3.32 |

| EFE Score | IFE Score: Strong (3.0-4.0) | Average (2.0-2.99) | Weak (1.0 – 1.99) |
|---|---|---|---|
| High (3.0-4.0) | I Growth | II Growth | III Rentrenchment |
| Medium (2.0-2.99) | IV Stability | V Stability | VI Rentrenchment |
| Low (1.0-1.99) | VII Growth | VIII Growth | IX Likuidasi |

Figure 2. Internal - External Matrix

**SWOT Matrix**

Using a SWOT analysis, strategies were developed by evaluating both internal and external elements. According to Mayang and Shinta (2020), SWOT analysis is a methodical process of identifying different aspects with the goal of developing logical company strategies to maximize strengths, address weaknesses, seize opportunities, and reduce threats. To create workable plans, these analyses were combined into a SWOT matrix. The results were divided into four primary approaches: WO (Weaknesses – Opportunities) overcomes weaknesses by seizing opportunities, WT (Weaknesses – Threats) addresses weaknesses to reduce potential threats, SO (Strengths – Opportunities) uses strengths to capitalize on opportunities, and ST (Strengths – Threats) uses strengths to mitigate potential threats (Martina et al. 2024). The SWOT matrix produces several alternative strategies for developing the honey bee business as presented in the Figure 3.

**QSPM Matrix**

Based on the QSPM Matrix calculation, here is the order of strategy priorities based on the highest to lowest Total Attractiveness Score (Table 4). The SO strategy is the main priority for KTH Sadar Tani Muda, as it has the highest Total Attractiveness Score (TAS), indicating that leveraging internal strengths to capitalize on external opportunities is the most effective approach for business development. To achieve this, digital marketing and e-commerce should be optimized to expand the reach of the premium honey market, ensuring better visibility and direct consumer engagement. Additionally, developing innovative and organic honey-based products will allow the business to align with the growing health-conscious consumer trend, increasing its market appeal. Strengthening partnership networks with communities, institutions, and stakeholders is also essential to enhance business competitiveness and sustainability. Furthermore, government support should be maximized in areas such as honey bee cultivation, production technology advancements, and financial assistance to strengthen operational efficiency. To improve productivity, the adoption of simple yet modern technology is crucial in increasing honey production efficiency and quality standards. Additionally, expanding export market penetration and improving product quality certifications will enable KTH Sadar Tani Muda to meet premium market demands and compete internationally. Lastly, social media and digital platforms should be utilized more actively to promote beekeeping education, marketing campaigns, and product awareness, ensuring a stronger brand presence in the competitive honey market. By implementing these strategies, KTH Sadar Tani Muda can significantly enhance its market position, improve farmer welfare, and achieve long-term business sustainability.

**Managerial Implications**

The development of the honey bee business at KTH Sadar Tani Muda requires a targeted strategy to enhance competitiveness and sustainability while addressing the unique challenges faced by this organization.

1. Strengthening Managerial Capacity for Small-Scale Farmer Groups. Unlike large commercial honey producers, KTH Sadar Tani Muda operates as a community-based farmer group, requiring a more localized approach to business and financial management. Therefore, tailored training programs should focus on simplified financial management tools, such as digital bookkeeping applications, that can be easily adopted by farmers with limited financial literacy. Additionally, leadership training for KTH administrators is crucial to improve decision-making processes and resource allocation.
2. Optimization of the Supply Chain for Local and Regional Markets. The honey supply chain at KTH Sadar Tani Muda is still fragmented, with inefficiencies in post-harvest processing and distribution. To reduce dependence on seasonal sales, the group should establish a structured honey collection and distribution system, ensuring

consistent supply to retail partners and direct-to-consumer markets. Additionally, investment in post-harvest equipment, such as honey extractors and vacuum sealers, is necessary to improve product quality and shelf life, directly benefiting KTH's ability to compete with commercial honey brands.

3. Expanding Market Access Through Digital Marketing and E-Commerce. While KTH Sadar Tani Muda already utilizes social media (Instagram, Facebook, YouTube) for promotions, its direct-to-consumer sales through e-commerce platforms are still underdeveloped. A dedicated digital marketing team within KTH should be trained to manage online sales, create content, and optimize digital advertisements to reach health-conscious consumers who prefer organic and natural products. Additionally, partnerships with local e-commerce platforms and specialty food marketplaces can provide stable online sales channels.

| Internal / External | Strenghts (S) | Weakness (W) |
|---|---|---|
| | 1. Clear division of tasks in production, marketing, and beekeeping management.<br>2. A culture of mutual cooperation and innovation that supports business sustainability.<br>3. A wide and active partnership network<br>4. Diverse sources of income from honey and its derivatives.<br>5. Having more than 650 bee hives with sustainable honey production.<br>6. Application of simple technology to improve product quality.<br>7. KTH members are experienced in bee cultivation and education.<br>8. Use of social media and digital platforms for promotion and education | 1. The operational and marketing organizational structure is not optimal.<br>2. Access to modern retail markets is still limited.<br>3. Requires additional investment to increase production and post-harvest.<br>4. Post-harvest facilities are still simple.<br>5. Do not have research collaboration with academic institutions.<br>6. Do not have product certification.<br>7. Stock and financial management is still manual. |
| Opportunities (O)<br>1. Healthy lifestyle trends increase demand for natural honey.<br>2. Government support through social forestry programs and assistance to bee farmers.<br>3. Digital marketing and e-commerce expand market reach.<br>4. Export potential and premium market for high-quality organic honey.<br>5. Technological innovation increases production efficiency.<br>6. Public awareness of natural and organic products is increasing.<br>7. Collaboration with communities and organic certification increase competitiveness. | SO Strategy<br>• Optimizing digital marketing and e-commerce to expand the market (S3, S4, O3)<br>• Developing innovative products according to healthy lifestyle trends (S2, O1)<br>• Strengthening partnership networks to increase competitiveness (S3, O7)<br>• Utilizing government support in the development of cultivation and technology (S7, O2)<br>• Using simple and modern technology to increase production efficiency (S6, O5)<br>• Expanding export markets and adjusting global quality standards (S5, O4)<br>• Using social media more actively for beekeeping promotion and education (S8, O3). | WO Strategy<br>• Increasing capacity and training to improve organizational structure (W1, O6)<br>• Building research collaboration with academic institutions for product innovation (W5, O5)<br>• Seeking access to modern retail markets through certification and branding improvements (W2, O3)<br>• Optimizing investments to improve post-harvest and production facilities (W3, O5)<br>• Utilizing digital marketing to overcome market limitations (W6, O4)<br>• Implementing IT-based stock and financial management systems for better business performance (W7, O2) |
| Threats (T)<br>1. Price fluctuations due to competition with cheap imported honey.<br>2. Climate change reduces the availability of bee food and honey production.<br>3. The use of pesticides around agricultural areas is risky for bees.<br>4. Certification regulations and food safety standards are obstacles for small businesses.<br>5. Limited access to modern technology and training increases production.<br>6. Large honey producers dominate the market with strong distribution networks.<br>7. The existence of fake honey creates consumer distrust of real honey | ST Strategy<br>• Establish a competitive pricing strategy to compete with imported honey (S4, T1)<br>• Improve product quality and differentiation to face market competition (S6, T5)<br>• Collaborate with local farmers to reduce the impact of pesticides on bees (S7, T3)<br>• Utilize community networks to build market trust in genuine honey (S4, T6)<br>• Develop production technologies that are more adaptive to climate change (S6, T2)<br>• Optimize financial and stock management to increase efficiency (S7, T7)<br>• Follow certification standards to increase competitiveness against strict regulations (S3, T4) | WT Strategy<br>• Increasing production cost efficiency in competing with imported honey (W3, T1)<br>• Diversifying product types and packaging to reduce price competition dependency (W6, T6)<br>• Developing a research-based production strategy for sustainable growth (W5, T5)<br>• Improving access to certification and collaboration to increase competitiveness (W2, T4)<br>• Collaboration with stakeholders to handle pesticide risks (W4, T3)<br>• Improving business management to be more transparent and professional (W7, T7) |

Figure 3. SWOT Matrix

4. Certification and Branding to Enhance Product Differentiation. Unlike large-scale honey producers, KTH Sadar Tani Muda lacks formal certification, which limits its ability to penetrate premium markets. The organization should prioritize organic, halal, and food safety certifications, allowing it to differentiate its products and compete in premium and export markets. Moreover, strong branding strategies should be developed, emphasizing the uniqueness of forest honey, its ecological benefits, and the ethical production process to appeal to high-value consumers.
5. Collaboration with Academic Institutions and Research Centers for Innovation. Unlike corporate honey producers, KTH Sadar Tani Muda lacks access to scientific research and technological advancements in beekeeping. Establishing partnerships with local universities, agricultural research centers, and beekeeping experts will provide new insights into improving honeybee productivity, combating climate-related challenges, and developing innovative honey-based products. Such collaborations can also facilitate farmer training programs and potential funding opportunities for technological adoption.
6. Environmental Sustainability and Climate Adaptation Strategies. Given that KTH Sadar Tani Muda operates within a forest ecosystem, climate change and deforestation pose significant threats to honey production. The group should implement environmentally friendly beekeeping techniques, such as diversified forage planting, to ensure a stable nectar supply throughout the year. Additionally, advocacy and awareness programs should be initiated to educate local farmers on reducing pesticide use, which directly impacts bee health and honey yields.

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

The development of honey bee business in KTH Sadar Tani Muda has great potential in improving farmer welfare and supporting environmental sustainability. The main strength factors in this business include the availability of supporting natural resources, good organizational culture, and experience in beekeeping. However, the main challenges faced are limited capital, lack of access to modern markets, and competition with imported and fake honey. Based on the SWOT analysis and IFAS-EFAS Matrix, the recommended business development strategies include increasing farmer capacity, optimizing digital marketing, product diversification, and collaborating with various parties to support capital strengthening and market access. By implementing strategies based on internal advantages and utilizing external opportunities, the KTH Sadar Tani Muda honey bee business can develop sustainably and have high competitiveness in the market.

Table 4 QSPM Matrix

| Strategy Type | Total Attractiveness Score (TAS) | Description |
|---|---|---|
| SO Strategy (Strength-Opportunities) | 5.608 | Optimizing internal strengths to take advantage of external opportunities. |
| ST Strategy (Strength-Threats) | 5.495 | Using strengths to overcome external threats. |
| WO Strategy (Weakness-Opportunities) | 5.291 | Reducing internal weaknesses by taking advantage of external opportunities. |
| WT Strategy (Weakness-Threats) | 4.662 | Minimizing weaknesses while avoiding threats. |

**Recommendations**

To improve the competitiveness and sustainability of honey bee businesses, KTH Sadar Tani Muda needs to strengthen the business management capacity of its members through intensive training in finance, digital marketing, and product innovation. The implementation of a digital-based financial recording system can also improve transparency and operational efficiency. In addition, optimizing marketing through digital platforms and attractive branding strategies, such as environmentally friendly packaging and educational content on the benefits of forest honey, can help expand market reach, especially in the premium segment.

Product diversification and obtaining certifications, such as organic and halal, are important steps to increase the added value and competitiveness of products in the modern market. KTH also needs to establish partnerships with financial and academic institutions to obtain support in innovation and business financing. In addition, education for farmers on bee ecosystem conservation and the application of cultivation techniques that are adaptive to climate change are essential to maintain the stability of honey production. By implementing these steps, KTH Sadar Tani Muda can optimize their business potential, improve farmer welfare, and contribute to environmental conservation.

This study has several limitations that should be acknowledged. Firstly, it is limited to KTH Sadar Tani Muda in Bojongmurni Village, Ciawi District, Bogor Regency, making its findings less generalizable to honey bee businesses in different regions with varying economic and environmental conditions. Secondly, while the study integrates SWOT, IFAS-EFAS, and QSPM analysis, much of the data is qualitative, relying on interviews and observations rather than large-scale quantitative surveys, which could enhance statistical reliability. Additionally, the study provides a snapshot analysis without a longitudinal assessment, meaning it does not track long-term business performance, market changes, or climate-related challenges. Furthermore, although the study identifies competition with imported and counterfeit honey, it lacks a detailed comparative analysis of pricing, branding, and marketing strategies of competitors. Lastly, while government support is noted as an opportunity, the study does not assess the effectiveness of policy implementation at the local level. Future research should expand geographic coverage, incorporate financial and market performance metrics, and conduct long-term monitoring to provide a more comprehensive understanding of honey bee business sustainability.

## REFERENCES

Adgaba, N., Al-Wadaan, M. A., & El-Metwally, M. A. (2014). Economic potential of beekeeping in rural development: A case study of Apis mellifera L. Saudi Journal of Biological Sciences, 21(2), 183-187.

Aini, L. Q., Iskandar, A. M., & Hardiansyah, G. (2019). Peranan kelompok tani dalam pengelolaan madu lebah hutan (Apis dorsata fabricius) oleh masyarakat di Desa Nanga Leboyan Kecamatan Selimbau Kawasan Danau Sentarum Kabupaten Kapuas Hulu. Jurnal Hutan Lestari, 7(4), 1612-1623. https://doi.org/10.26418/jhl.v7i4.38192

Airlangga, M. S., Falah, M. D., & Suwadji, S. (2023). Teknik produksi dan nilai finansial madu hutan Sialang di Kelurahan Pelalawan Kecamatan Pelalawan Kabupaten Pelalawan: Production techniques and financial value of Sialang forest honey in Pelalawan Village Pelalawan District Pelalawan Regency. Hutan Tropika, 18(2), 260-266. https://doi.org/10.36873/jht.v18i2.10551

David, F. R. (2011). Strategic management concepts and cases. Prentice Hall.

Gurel, E., & Tat, M. (2017). SWOT analysis: A theoretical review. Journal of Social and Humanities Sciences Research, 4(10), 124-131. https://doi.org/10.17719/jisr.2017.1832

Gupta, M., Charu, S., & Anshu, A. (2015). Strategy formulation performance improvement of Indian corrugated industry: An application of SWOT analysis and QSPM matrix. Journal of Applied Packaging Research, 7(3), 60-75.

Harianja, A. H., Adalina, Y., Pasaribu, G., Winarni, I., Maharani, R., Fernandes, A., & Kuspradini, H. (2023). Potential of beekeeping to support the livelihood, economy, society, and environment of Indonesia. Forests, 14(2), 321. https://doi.org/10.3390/f14020321

Harjanto, S., Mujianto, M., & Ramlan, A. (2020). Alternatif mata pencaharian masyarakat. Yayasan Swaraowa.

Hastari, B., & Yulianti, R. (2018). Pemanfaatan dan nilai ekonomi hasil hutan bukan kayu di KPHL Kapuas-Kahayan. Jurnal Hutan Tropis, 6(2). https://doi.org/10.20527/jht.v6i2.5402

Martina, S., Syarief, R., & Taryana, A. (2024). Business strategy development of PT Anugrah Alam Mitra Makmur. Business Review and Case Studies, 5(2), 235-235. https://doi.org/10.17358/brcs.5.2.235

Mayang, A., & Shinta, R. (2020). Analisis SWOT dalam menentukan strategi pemasaran (Studi kasus di Kantor Pos Kota Magelang 56100). Jurnal Ilmu Manajemen, 17(2), 58–70.

Mila, N., Alfauji, M., Wahyu, M., Aldianoor, M., Zaimah, Z., Sari, D. M., & Mahfudz, T. W. (2024). Strategi digital marketing untuk pemasaran produk lokal UMKM madu Kelulut Asli Lembeng. Jurnal Pengabdian kepada Masyarakat Nusantara, 5(1), 1102-1107. https://doi.org/10.55338/jpkmn.v5i1.2902

Mulasih, S., Sukardi, Noor, M. A., & Tohiroh. (2024). Analisis sumber daya manusia dalam usaha kecil pertanian. Jurnal Ilmiah Ekonomi Manajemen dan Bisnis, 5(2), 14-20. https://doi.org/10.60023/rwtt1908

Reflis, R., Yuliarti, E., & Marbun, T. (2022). Analysis of Trigona sp. honeybee livestock's profitability in Bengkulu. Journal of Global Sustainable Agriculture, 2(2), 50-54. https://doi.org/10.32502/jgsa.v2i2.4437

Resinta, R., Rashid, A., & Firdaus, M. (2024). Komunikasi pembangunan dalam pemberdayaan kelompok tani hutan budi daya lebah madu. Jurnal Kebijakan Pembangunan, 19(1), 99-102. https://doi.org/10.47441/jkp.v19i1.351

Samarghandian, S., Farkhondeh, T., & Samini, F. (2017). Honey and health: A review of recent clinical research. Pharmacognosy Research, 9(2), 121.

Suparno, R., Nurbaiti, A., Afiff, S., Tarmizi, H., Mariani, E., & Sastriastanti, F. (2018). Toward just and sustainable forestry in Indonesia. The Jakarta Post Publishing. Retrieved from http://silk.dephut.go.id/app/Upload/repos/201906

Wildiana, R. A., Lestari, L. A., & Supriyati, S. (2022). Alasan konsumen dalam membeli dan mengonsumsi madu sebagai suplemen kesehatan. Jurnal Gizi Klinik Indonesia, 20(1), 9-20. https://doi.org/10.22146/ijcn.75261

Yudianti, Y., Herlinda, S., Sari, J. M. P., Rindiani, D. E., Marlina, D. N., & Netaria, N. (2023, November). Budidaya lebah tanpa sengat (Hymenoptera: Apidae) di Kabupaten Muara Enim, Sumatera Selatan. Seminar Nasional Lahan Suboptimal, 11(1), 333-344.