Vol. 26 No.1 (Januari 2025) 001-008
e-ISSN 2548-6101 p-ISSN 1411-318X

Jurnal Teknologi Lingkungan

Journal Homepage: ejournal.brin.go.id/JTL

Strategies to Increase Paddy Rice Production in Sugihwaras Village, Candi District, Sidoarjo Regency

Strategi Peningkatan Produksi Padi di Desa Sugihwaras Kecamatan Candi Kabupaten Sidoarjo

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INFORMASI ARTIKEL

Histori artikel:
Diterima 13 September 2023
Disetujui 26 April 2024
Diterbitkan 31 Januari 2025

Kata kunci:
SWOT
Peningkatan Produksi Padi
Komoditas Padi Sawah

ABSTRAK

Sawah yang ditanami padi dan produksi beras merupakan komoditas makanan yang sangat penting bagi manusia. Sekitar 85% dari populasi Indonesia mengonsumsi beras sebagai makanan pokok. Produksi sawah di Desa Sugihwaras, Kecamatan Candi, Kabupaten Sidoarjo, memainkan peran penting dalam menjaga ketersediaan beras dan meningkatkan kesejahteraan para petani. Namun, fluktuasi dalam produksi padi dan menyusutnya lahan pertanian menjadi tantangan yang dihadapi oleh para petani. Penelitian ini bertujuan untuk menganalisis strategi peningkatan produksi komoditas padi sawah di Desa Sugihwaras, Kecamatan Candi, Kabupaten Sidoarjo. Analisis dilakukan dengan menggunakan matriks Internal-External (IE) yang melibatkan evaluasi faktor internal dan eksternal yang mempengaruhi produksi padi sawah. Faktor internal yang dievaluasi meliputi kekuatan (strenght) dan kelemahan (weakness), sedangkan faktor eksternal mencakup peluang (opportunities) dan ancaman (threats). Berdasarkan hasil analisis, beberapa strategi direkomendasikan untuk meningkatkan produksi padi sawah di Desa Sugihwaras yaitu memperkuat keterampilan dan pengetahuan petani, optimalisasi pemanfaatan lahan dan saluran irigasi, meningkatkan aksesibilitas dan infrastruktur, membangun dan meningkatkan kelompok tani, mendapatkan pendampingan teknis, memperkuat dukungan pemerintah, menghadapi tantangan seperti perubahan iklim. Kedepannya implementasi strategi ini secara holistik dan berkelanjutan dapat meningkatkan produksi komoditas padi sawah di Desa Sugihwaras, memberikan manfaat ekonomi bagi petani, dan meningkatkan kesejahteraan masyarakat setempat. Penelitian ini memberikan kontribusi dalam pengembangan strategi peningkatan produksi komoditas pertanian dan dapat menjadi acuan bagi pemangku kepentingan terkait dalam pengambilan keputusan.

ARTICLE INFO

Article history:
Received 13 September 2023
Accepted 26 April 2024
Published 31 January 2025

Keywords:
Increased Paddy Rice Production
Lowland Rice Commodity
SWOT

ABSTRACT

Rice fields, which are cultivated with rice and produce rice, are a highly important food commodity for humans. Approximately 85% of the Indonesian population consumes rice as their staple food. The rice production in Sugihwaras Village, Candi Sub-district, Sidoarjo Regency, plays a crucial role in ensuring the availability of rice and improving the well-being of farmers. However, fluctuations in rice production and the decreasing agricultural land pose challenges for the farmers. This research aims to analyze strategies to increase paddy rice production in Sugihwaras Village, Candi District, Sidoarjo Regency. The analysis is conducted using the Internal-External (IE) matrix, which involves evaluating internal and external factors that influence paddy rice production. The internal factors evaluated include strengths and weaknesses, while the external factors encompass opportunities and threats. Based on the analysis results, several strategies are recommended to enhance paddy rice production in Sugihwaras Village. The recommended strategies include: strengthening farmers' skills and knowledge, optimizing land utilization and irrigation channels, improving accessibility and infrastructure, establishing and enhancing farmer groups, obtaining technical assistance, strengthening government support, and addressing challenges such as climate change. Then in the future, sustainable implementation of these strategies can improve paddy rice commodity production in Sugihwaras Village, provide economic benefits to farmers, and enhance the welfare of the local community. This research contributes to the development of agricultural commodity production enhancement strategies and can serve as a reference for relevant stakeholders in decision-making.

1. INTRODUCTION

1.1 Background

Paddy production in Indonesia plays a crucial role in the country's agriculture and economy (Goli *et al.*, 2021). The paddy field transformed into rice is one of the crucial food commodities for humans (Mukhlis & Gürçam, 2022). Rice is the staple food in Indonesia, and it is a dietary essential for most of the population. As such, rice production is of paramount importance to food security and livelihoods (Ansari *et al.*, 2021). Approximately 85% of the Indonesian population consumes rice as their staple food (Fathonah & Mashilal, 2021; Kusumah, 2019). Indonesia's vast and diverse geography, which includes thousands of islands and a range of climates, allows for the cultivation of various rice varieties. Different regions may specialize in specific types of rice based on local conditions. Java and Sumatra are among the primary rice-producing islands in Indonesia. However, rice is cultivated in various regions across the country. The choice of rice varieties and production techniques can vary by region (Ansari *et al*., 2021; Dhamira & Irham, 2020).

The government also plays a significant role in formulating strategic national policies related to the provision of rice, particularly because Indonesia is a country with high agricultural and antioxidant plant resources in the world (Sundari & Wijayanti, 2021). The Indonesian government has historically played a substantial role in supporting the rice industry. This support includes policies to stabilize prices, subsidies for farmers, investments in agricultural infrastructure, and programs to enhance rice production and quality. The Indonesian rice sector faces challenges, including the conversion of agricultural land for urban development, environmental concerns, and the need for modernization (Sundari & Wijayanti, 2021). Land-use changes due to urbanization can reduce available land for rice cultivation. Indonesian agriculture is gradually modernizing, with the adoption of advanced farming practices, machinery, and technology to increase productivity. This modernization aims to improve food security and economic sustainability. There's an increasing emphasis on sustainable rice farming practices to address concerns related to resource conservation, water management, and environmental sustainability while increasing rice production (Meiliawati *et al*., 2021).

Indonesia not only produces rice for domestic consumption but is also involved in the rice trade. The country imports and exports rice, and the balance depends on factors such as production levels, market conditions, and government policies (Meiliawati *et al*., 2021). Indonesian government's support for the rice industry is multifaceted and comprehensive, aiming to ensure food security, support farmers, and enhance the competitiveness and sustainability of the sector (Ricky Efran, 2020). These efforts are essential for meeting the dietary needs of the population and fostering economic growth. Research institutions and organizations in Indonesia work on improving rice varieties, disease resistance, and overall crop productivity. This research is crucial for ensuring the sustainability and competitiveness of the Indonesian rice industry (Ricky Efran, 2020).

In this context, the production of paddy fields in Sugihwaras Village, Candi District, Sidoarjo Regency, plays an important role in maintaining rice availability and improving the welfare of farmers. However, challenges in increasing paddy production in the village remain obstacles that need to be addressed (Ricky Efran, 2020; Saleh & Suherman, 2021). Fluctuations in paddy production and the shrinking agricultural land in Sidoarjo Regency contribute to the difficulty faced by farmers in utilizing the agricultural economic potential for their livelihoods (Managanta, 2020; Meiliawati *et al*., 2021).

The analysis method that will be used is the Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis, which includes the evaluation of internal and external factors. By utilizing the Internal Factor Evaluation (IFE) matrix and External Factor Evaluation (EFE) matrix, this research will generate strategies suitable for the internal and external environmental conditions of Sugihwaras Village, Candi District, Sidoarjo.

This research is expected to contribute to improving the welfare of farmers and maintaining the availability of rice in Sugihwaras Village. Additionally, the results of this research can serve as information and considerations for policy-making related to agricultural production improvement.

1.2 Research Objectives

This research aims to develop strategies to increase paddy production in Sugihwaras Village, Candi District, Sidoarjo Regency and to arrange an alternative recommendation program development increasing paddy rice production in the district. The strategies include: enhancing farmers' skills through training, fostering knowledge exchange between farmers and extension workers; optimizing land and irrigation channel usage; improving accessibility and infrastructure; developing farmers' groups for collaboration; and providing mentoring and technical support to enhance production and marketing efficiency.

2. METHOD

2.1 Research Design

This research is conducted in Sugihwaras Village, Candi District, Sidoarjo Regency, East Java Province. The research location can be seen in Figure 1 below. In this environment, paddy field productivity in Sugihwaras Village, Candi District, Sidoarjo Regency is critical to preserving rice availability and enhancing farmer welfare. However, issues in expanding paddy output in the community still need to be addressed. Fluctuations in paddy output and declining agricultural land in Sidoarjo Regency lead to farmers' difficulty in maximizing agricultural economic potential for their lives.

The research is carried out over a three-month period, from February to May 2023. This study employs both qualitative and quantitative approaches. The qualitative approach is used to understand the perspectives and experiences of the informants through in-depth interviews, while the quantitative approach is used to collect data through questionnaire surveys.

The qualitative approach in this research involves in-depth interviews to understand the informants' perspectives and experiences. This approach has been widely used in

previous research (Creswell, 2007). The quantitative approach involves questionnaire surveys, which have been proven effective in systematically collecting and measuring data (Creswell, 2007).

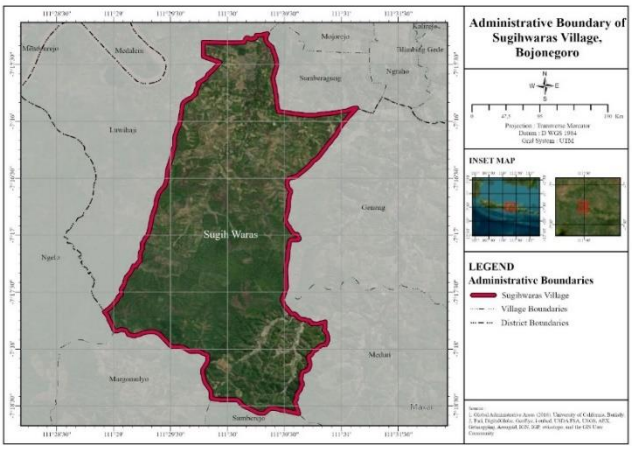

Figure 1. Map of research location

2.2 Data Sources

This study will involve the collection of primary and secondary data. Primary data will be obtained through interviews and questionnaires administered to relevant informants, namely the staff of Sugihwaras Village Government and members of Sugihwaras Village Farmer Groups. Meanwhile, secondary data will be obtained from publications by the Indonesian Central Bureau of Statistics regarding Sidoarjo Regency.

This study utilizes primary and secondary data. Primary data is obtained through interviews and questionnaire surveys conducted with the staff of Sugihwaras Village Government and members of Sugihwaras Village Farmer Groups. Secondary data is obtained from publications by the Indonesian Central Bureau of Statistics related to Sidoarjo Regency. Primary data is obtained through interviews and questionnaire surveys conducted with the staff of Sugihwaras Village Government and members of Sugihwaras Village Farmer Groups. Secondary data is obtained from publications by the Indonesian Central Bureau of Statistics related to Sidoarjo Regency. This information can be found in official publications and statistical reports issued by the Central Bureau of Statistics.

2.3 Data Analysis

Data analysis will be conducted using the SWOT analysis method. The evaluation of internal and external factors will be done using the IFE matrix and EFE matrix. Furthermore, the SWOT matrix analysis tool will be used to generate strategies that are suitable for the internal and external environmental conditions of Sugihwaras Village. The knowledge-based SWOT analysis is an effective tool in strategic planning for small and medium-sized enterprises. This method helps identify relevant internal and external factors for strategic decision-making (Yan et al., 2019).

3. RESULTS AND DISCUSSION

3.1 Overview of the Research Location

Sugihwaras Village is one of the 24 villages located in Candi District, Sidoarjo Regency, with a land area of 120.10 hectares. The population consists of 4,107 males and 4,084 females, totaling 8,191 individuals. It is divided into 28 neighborhood units (RT) and 8 community units (RW), comprising two hamlets, namely Waras and Rejo (BPS Kabupaten Sidoarjo, 2022). The vision of Sugihwaras Village is "Realizing a clean and transparent village governance system to create a fair, prosperous, and prosperous village". The mission of Sugihwaras Village includes: (1) organizing the village government's work system and improving the quality of services to the community, emphasizing speed, accuracy, and correctness; (2) managing village assets correctly and ensuring proper utilization; (3) empowering existing institutions, optimizing youth and sports activities, and reducing juvenile delinquency through the establishment of youth groups and the improvement of sports facilities; (4) creating a safe, orderly, harmonious, and cohesive community in Sugihwaras Village based on principles such as equal status, shared burdens, and shared benefits; implementing infrastructure facilities and maintenance based on the structure and priority needs of the community, emphasizing efficient and accurate service.

3.2 Factors Driving Increased Rice Production

The results of this study are one of which is the presence of skills and knowledge to improve farming patterns towards agribusiness. Counseling activities related to extension materials should be customized to meet the specific needs of farmers and the extension capabilities that are currently in the moderate category. These activities require special attention from stakeholders, including technical training and enhanced educational services. It is important to increase the intensity of routine extension services and improve the capacity of extension workers. Additionally, providing the necessary infrastructure and supporting facilities is crucial for the successful implementation of extension activities. Supporting extension activities is essential to enhance the capacity of lowland rice farmers (Saleh & Suherman, 2021; Tambunan et al., 2022).

In addition to analyzing internal factors, identifying external factors is also crucial to understanding the opportunities and threats faced in the process of increasing rice production in Sugihwaras Village. Opportunities and threats need to be considered in developing rice production in the area. Table 1 presents a detailed analysis of the internal and external factors influencing rice production in Sugihwaras Village, categorized into strengths, weaknesses, opportunities, and threats (SWOT). High market demand provides an opportunity for farmers to increase production and meet the growing market needs. Government programs and policy support offer incentives and assistance to farmers in enhancing productivity and efficiency (Goli *et al*., 2021). The presence of agricultural extension workers serves as a source of knowledge and skills for farmers to adopt better farming practices. Additionally, the existence of BUMDES can aid in the effective management and marketing of agricultural products.

Table 1. Internal and External Factors

Strength	Weakness
1. Farmers' skills and knowledge	1. Limited knowledge and skills of farmers
2. Land availability	2. Lack of access to agricultural technology
3. Sufficient irrigation channels	3. Farmers' operational capital
4. Supportive road access	4. Suboptimal farmer groups
5. Existence of farmer groups	5. Insufficient support from the village government.
6. Support from the village government.	
Opportunity	**Threat**
1. High market demand	1. Climate change and unstable weather patterns
2. Government programs and policy support	2. Plant pests and diseases
3. The presence of agricultural extension workers	3. Price competition in the market
4. The existence of Badan Usaha Milik Desa (BUMDES)	4. Market changes and consumer demands.

Table 2. IFE Weighting Matrix

Internal Factors (1)	Weight (2)	Rating (3)	Weight X Rating (4)
Strength			
Farmers' skills and knowledge	0.12	3.27	0.39
Land availability	0.12	3.12	0.37
Sufficient irrigation channels	0.13	3.05	0.40
Supportive road access	0.12	3.89	0.47
Existence of farmer groups	0.13	3.12	0.41
Support from the village government	0.12	3.27	0.39
Total	0.74		2.43
Weakness			
Limited knowledge and skills of farmers	0.12	2.62	0.31
Limited access to agricultural technology	0.13	2.43	0.32
Farmers' operational capital	0.12	2.65	0.32
Underutilized farmer groups	0.12	2.42	0.29
Lack of support from the village government	0.12	2.35	0.28
Total	0.61		1.52
Overall Weight Total	1.35		3.95

Threats are external factors that pose potential risks or challenges to the organization. They are elements or situations in the external environment that could hinder the organization's ability to achieve its objectives or maintain its competitive position. In this research, some threats need to be monitored to increase rice production (Ansari et al., 2021; Dhamira & Irham, 2020). Plant pests and diseases can cause significant losses. Market price competition can affect farmers' profitability. Moreover, changes in the market and consumer demand can influence preferences and demand for rice products (Meiliawati et al., 2021). Market dynamics and consumer preferences play a pivotal role in the profitability of rice farmers. Adapting to changing market conditions and consumer demands is essential for the long-term success of the rice industry (Ricky Efran, 2020).

3.3 Internal Factor Evaluation (IFE) Weighting Matrix

The Internal Factor Evaluation (IFE) matrix is a tool used to evaluate internal factors that influence the increase in rice production in Sugihwaras Village. In the IFE matrix, each internal factor is assigned a weight based on its level of importance and is assessed qualitatively or quantitatively. Table 2 is a summary of the evaluation of internal factors that affect the increase in rice production.

Based on the analysis in Table 2, the strengths have a total weight of 0.74, while the weaknesses have a total weight of 0.61. The results show that the strengths are more dominant than the weaknesses in the effort to increase rice production in Sugihwaras Village, Candi District, Sidoarjo Regency. Therefore, it is important to focus on utilizing the existing strengths and addressing the weaknesses to achieve optimal production improvement.

Based on the results of identifying the strengths and weaknesses of BUMDes Lengkosambi in the form of a cross/matrix to determine the appropriate strategy for the establishment of BUMDes in East Lengkosambi Village Participating with surrounding villages that have formed BUMDes, participating together with the Local Government in efforts to develop BUMDes, updating information about BUMDes, improving supporting facilities for BUMDes, and utilizing appropriate technology per the advantages of village products (Laga & Jamu, 2018). Other research in the Usar

Village community also mentions that there is a sufficient number of human resources available, and the BUMDes capital is available in sufficient amounts. However, the Usar Village community needs to address weaknesses in the non-professional management of BUMDes, low human resource quality, and suboptimal BUMDes facilities (Syafruddin, 2020).

3.4 Weighting External Factor Evaluation (EFE) Matrix

The External Factor Evaluation (EFE) matrix is a strategic management tool used to evaluate external factors that impact the performance or success of an organization, including both opportunities and threats in the external environment. The EFE matrix helps identify and measure the extent to which these external factors can have a positive or negative impact on the organization. The EFE matrix consists of two main components: relevant external factors and weights indicating the importance of each factor. These external factors can represent opportunities.

Each external factor is assigned a weight to indicate its level of importance to the organization. The weights can be determined based on subjective assessment or through more detailed analysis of their impact and significance. Once the external factors and weights are determined, each factor is assessed using a rating scale that reflects the extent to which it affects the organization. Table 3 is a summary of the evaluation of external factors that affect the increase in rice production.

In the analysis of external factors in Table 3, the total weight of opportunities (0.55) is higher than the total weight of threats (0.49). The result indicates that overall there are more opportunities than threats that can impact the increase in rice production in the village. This identification result provides an overview that there is potential for opportunities to be leveraged, such as high market demand, government programs and policy support, the presence of agricultural extension workers, and the existence of Village-Owned Enterprises (BUMDES). This information can help formulate appropriate strategies to optimize the available opportunities while addressing potential threats in efforts to increase rice production in the village. Incorporating these responses into a well-designed strategic plan can help farmers and the rice industry not only overcome challenges but also harness the full potential of available opportunities. Strategic planning ensures that resources are allocated efficiently and that the industry remains adaptable to a dynamic agricultural landscape (Ricky Efran, 2020).

3.5 Internal-External (IE) Matrix Quadrant

The IE matrix combines the results of the internal factor evaluation (IFE) matrix and the external factor evaluation (EFE) matrix to provide a comprehensive overview of the strategic position based on the analysis. The result of the IFE analysis shows a score of 3.95, while the result of the EFE analysis shows a score of 2.94. The IE matrix quadrant can be seen in Figure 2.

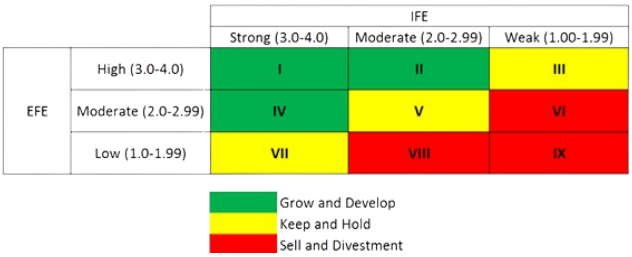

Figure 2. IE Matrix Quadrant

The Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrices are strategic management tools used to assess a company or organization's internal strengths and weaknesses (IFE) and external opportunities and threats (EFE). These matrices are typically presented as grids or matrices with various factors listed along the rows and columns, and numerical scores assigned to each factor based on their importance and the organization's performance in those areas.

Table 3. EFE Weighting Matrix

External Factors (1)	Weight (2)	Rating (3)	Weight X Rating (4)
Opportunities			
High market demand	0.20	3.31	0.66
Government programs and policy support	0.10	2.84	0.28
The presence of agricultural extension workers	0.10	2.95	0.30
The existence of Badan Usaha Milik Desa (BUMDES)	0.15	3.06	0.46
Total	0.55		1.70
Threats			
Climate change and unstable weather patterns	0.12	2.62	0.31
Plant pests and diseases	0.13	2.43	0.32
Price competition in the market	0.12	2.65	0.32
Market changes and consumer demands	0.12	2.42	0.29
Total	0.49		1.24
Overall Weight Total	1.04		2.94

The IFE matrix is divided into four quadrants:

Quadrant I: Grow and Build Strategy (Strengths-Oriented Quadrant): This quadrant includes factors with high importance and high-performance scores. These are the organization's well-managed strengths that contribute significantly to its competitive advantage. Strategies in this quadrant focus on leveraging and further developing these strengths to capitalize on opportunities in the external environment.

Quadrant II: Grow and Maintain Strategy (Strengths-Weaknesses Quadrant): This quadrant contains factors with high importance but low-performance scores. These represent areas where the organization has potential strengths but currently needs to improve. Strategies in this quadrant involve improving performance in these areas to exploit the organization's strengths and minimize weaknesses fully.

Quadrant III: Maintain and Improve Strategy (Weaknesses-Oriented Quadrant): This quadrant contains factors with low importance and low-performance scores. These are weaknesses of the organization that have not yet posed significant threats but should be monitored and addressed to prevent deterioration. Strategies in this quadrant aim to rectify weaknesses to prevent them from becoming significant threats in the future.

Quadrant IV: Defensive Strategy (Threats-Weaknesses Quadrant): This quadrant includes factors with high importance and low-performance scores. These factors represent significant threats to the organization that exploit its weaknesses. Strategies in this quadrant focus on defending against these threats by either minimizing weaknesses or finding ways to mitigate the impact of external threats.

Similarly, the External Factor Evaluation (EFE) matrix is also divided into four quadrants:

Quadrant I: Exploit Opportunities (Opportunities-Oriented Quadrant): This quadrant places factors with high importance and high scores for the organization's response to opportunities. These represent opportunities in the external environment that the organization is well-positioned to exploit. Strategies in this quadrant focus on maximizing the organization's capabilities to take advantage of these opportunities.

Quadrant II: Respond to Opportunities (Opportunities-Threats Quadrant): This quadrant contains factors with high importance but low scores. These represent missed opportunities or areas where the organization needs to improve its responsiveness to external opportunities. Strategies in this quadrant aim to enhance the organization's ability to recognize and capitalize on opportunities in the external environment.

Quadrant III: Avoid Threats (Threats-Oriented Quadrant): This quadrant categorizes factors with low importance and low scores for the organization's response to threats. These are threats in the external environment that do not currently pose significant risks but should be monitored. Strategies in this quadrant involve minimizing exposure to these threats or preparing contingency plans to mitigate their impact if they materialize.

Quadrant IV: Defend Against Threats (Threats-Oriented Quadrant): This quadrant includes factors with high importance and low scores for the organization's response to threats. These represent significant threats in the external environment that the organization needs to address. Strategies in this quadrant focus on developing defensive measures to protect against these threats and minimize their impact on the organization.

The analysis of the IFE and EFE matrices indicates that internal factors play a more vital role than external factors in increasing rice production (Quadrant I). However, it is important to address and manage the threats that can affect rice production. Efforts to utilize the available opportunities must also be implemented effectively to achieve optimal production increase as well as in any agricultural sector (Saleh & Suherman, 2021; Tambunan et al., *2022)*. Develop a detailed strategic plan that outlines the steps and strategies needed to achieve your production goals. This plan should consider market opportunities, resource allocation, and risk mitigation. Efficiently manage your resources, including land, labor, capital, and technology (Goli et al., 2021). Ensure that you have the necessary inputs and infrastructure to support increased production. Embrace modern farming technologies and practices that can enhance productivity. The farming technologies might include the use of advanced machinery, precision agriculture techniques, and improved irrigation systems. Provide training and education to farmers and agricultural workers to ensure they have the skills and knowledge needed to implement best practices effectively. Focus on producing high-quality rice that meets market demands. Implement quality control measures and certifications if applicable (Tambunan et al., 2022).

Establish reliable market channels and distribution networks to ensure that the increased production can reach consumers efficiently. Establishing market channels and distribution networks may involve partnerships with wholesalers, retailers, and export opportunities. Continuously monitor and evaluate the progress of your production efforts. Regularly assess whether you are on track to meet your objectives and make adjustments as needed (Meiliawati et al., 2021). Be prepared to adapt to changing conditions and market dynamics. various external factors influence agriculture, and the ability to adjust to new circumstances is vital for success. Ensure that production increases are sustainable in the long term. Practices should be environmentally and socially responsible to maintain the health of the land and the well-being of local communities. Identify potential risks and develop strategies to mitigate them. This could include insurance, diversification of crops, and pest and disease management plans (Managanta, 2020).

Collaborate with other stakeholders in the industry, including government agencies, agricultural extension

services, and research institutions. Collective efforts can lead to more effective and coordinated implementation. Use data and information to make informed decisions. Stay informed about market trends, weather conditions, and emerging technologies that can support production increases addressed (Saleh & Suherman, 2021). By implementing these practices effectively, the rice industry can not only seize available opportunities but also sustain and expand production in a way that benefits farmers, consumers, and the broader agricultural sector (Goli et al., 2021).

3.6 Discussion

The research emphasizes the importance of implementing these strategies for sustainable rice production in Sugihwaras Village, which can not only enhance the economic well-being of farmers but also contribute to the overall welfare of the local community (Tambunan et al., 2022). Additionally, it underscores the significance of this study in providing valuable insights and recommendations for relevant stakeholders involved in decision-making processes related to agricultural development and food security (Saragi et al., 2023). The strategies outlined based on the analysis of internal and external factors, as well as the IFE and EFE matrices, present a comprehensive approach to enhancing rice production in Sugihwaras Village. Strengthening support from the village government is crucial, as it involves providing sustainable assistance to farmers, advocating for supportive government policies, and addressing challenges while optimizing opportunities (Astoko & Helilusiatiningsih, 2023).

Providing training and education to farmers can enhance their agricultural practices and adaptability to changing conditions (Masruroh, 2021). These practices are supported by access to technical expertise and consultation services that help farmers adopt modern farming techniques and reduce risks (Kartika et al., 2024). Policy interventions, subsidies, and government support programs are crucial in addressing structural issues and market access barriers for farmers. In the face of uncertain climate change in Indonesia, government support can assist farmers by promoting the use of renewable energy such as solar panels and utilizing drones to monitor agricultural conditions (Jusman et al., 2021). Currently, proactive measures to mitigate the impact of climate change involve sustainable farming practices and climate-resistant crop varieties for long-term agricultural sustainability (Retnani Nurhidayati et al., 2020). This, of course, requires financial support to enable farmers to increase agricultural productivity. By implementing these strategies in a coordinated and sustainable manner, Sugihwaras Village can enhance rice production, optimize land and resource utilization, and improve economic well-being for the local community (Sanusi et al., 2021). Additionally, these efforts can contribute to long-term agricultural sustainability and food security in the region (Abubakar et al., 2021; Pakiding & Tahendrika, 2023).

4. CONCLUSION

Based on the analysis of internal and external factors, as well as the results from the IFE and EFE matrices, several potential strategies can be concluded to enhance rice production in Sugihwaras Village, Candi District, Sidoarjo Regency. Furthermore, strengthening support from the village government will involve the village government in providing sustainable support to farmers, such as capital assistance, infrastructure development, and access to broader markets, advocating for government policies and programs that support increased rice production, such as subsidies for fertilizer and quality seeds; addressing challenges and optimizing opportunities with anticipate climate change and weather pattern variations by implementing adaptive and innovative agricultural practices, develop effective pest and disease control programs to maintain the health of rice crops, monitor the market and consumer trends to adjust production strategies and meet high market demand. By implementing these strategies holistically and sustainably, rice production in Sugihwaras Village is expected to increase, farmers can optimize the potential of land and available resources, and sustainable economic well-being can be achieved for the local community.

ACKNOWLEDGMENT

We would like to thank the Sugihwaras Village Government and the community for helping me in providing data for our research. Thanks also to ITB Ahmad Dahlan, specifically Dr. Ir Nur Aini, M.Si, who has given me a chance to elaborate with her to make this research.

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