Herbal Plant Farming Development Strategy

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Herbal Plant Farming Development Strategy

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Abstract

The demand for herbal plants has increased significantly in the last few years, especially during the covid 19 pandemic. People believe that herbal products have savors to maintain body immunity. The purpose of this study was to analyze internal factors (strengths and weaknesses) and external factors (opportunities and threats), formulate policies, and identify priority strategies that can be applied by farmers in developing herbal farming. This research had conducted in Pace Village, Silo District, Jember Regency, from August to November 2021. The analysis used internal and external factors analysis, SWOT matrix, and QSPM analysis to determine priority strategies. The internal and external factor analysis showed that herbal plant farming was in Region V with defend and maintain position. Based on the SWOT matrix, eight strategies had earned to develop a herbal business. Based on the QSPM analysis, the key strategy was to increase farmers' knowledge regarding the prospects and marketing of herbal plants, with a total value of 8.365.

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INTRODUCTION

The outbreak of coronavirus disease or Covid 19 in 2019 turned out to have a positive impact on herbal plant farmers in Indonesia. Production and sales of herbal medicines have increased sharply in line with the increase in positive confirmed cases of Covid 19. It happens because people believe that herbal plants have savors that can strengthen the body's immunity, so the existence and culture of consuming herbs become a trend in society (Abu et al., 2021). Herbal plants can be the plants that are efficacious as medicine and believed to be able to overcome health problems. This plant is widespread in Indonesia and has been used to maintain a healthy body by the community for generations. Herbal plants have widely consumed today because several studies have shown that herbal plants do not cause side effects and can be absorbed by the body properly.

Jember Regency has high potential in the development of herbal plants. Some herbal plants include ginger, cardamom, turmeric, kaempferia galanga, curcuma, and noni. The herbal plant production center in Jember Regency is Silo District, with the three highest productions being ginger, noni, and cardamon, reaching 248,383, 123,202, and 1,268 kg, respectively (BPS-Statistics Indonesia Jember Regency 2021). The main problem faced by herbal farmers in Silo District is the low quality and quantity of production. It does cause by the minimum knowledge of farmers in cultivating herbal plants. So far, farmers are using simple technology and have not complied with the GAP and proper procedures for cultivation. Another problem is related to the downstream sector's less of knowledge in processing and marketing herbal products (Erdiansyah et al., 2020).

Due to that, farmers need to develop strategies to improve their herbal farming to become a profitable farming business. Abdillah (2019) stated that to enlarge market opportunities for herbal plants through increased interest in cultivation, education, and innovation related to herbal cultivation and processing, expand the distribution network of processed products, and develop partnerships with herbal farmers. Other studies reveal the strategy through advanced ginger cultivation technology, consistent and sustainable production, strengthening the market, and making it easier to obtain capital loans (Utomo et al., 2021).

The novelty of the research is the draft of a herbal plant farming development strategy from cultivation to marketing aspects. Previous research has only focused on product processing or marketing. Therefore, the objectives of this study were to analyze the internal and external factors, formulate a strategy for development, and determine the priority strategy for herbal plant farming development in Silo District, Jember Regency.

RESEARCH METHODS

This research had conducted in Pace Village, Silo District, Jember Regency. The research location had determined by purposive sampling, and the research location was a center for various herbal plant production in the Jember Regency. The research had conducted from August to November 2021. The respondents were 35 farmers who had routinely cultivated herbal plants in the last five years. The data collected in this study was primary data obtained by questionnaires through FGD (Forum Group Discussion), interviews, and direct field observations.

The data analysis method used to answer the first research objective was the internal factor evaluation (IFE) and external factor evaluation (EFE) in herbal plant farming. Internal Factor Evaluation (IFE) is related to Strength and Weakness, while External Factor Evaluation (EFE) consists of Opportunity and Threat. In calculating Internal-External Factor Evaluation, it is necessary to do weight, rating, and weighted score for internal and external tables in the herbal farming business. The weighting has based on the accumulation of strengths and weaknesses as well as opportunities and threats. The value had determined from discussions between researchers and herbal farmers in the research area. The weight of each of these factors starts from a scale of 1.0 (high importance) to 0.0 (low). The importance level of internal environmental weighting is based on the influence of strategic factors on its strategic position, while external factors on the ability to influence strategic factors.

$$\text{Weight} = \frac{\text{The total weight of certain variables}}{\text{The total number of variable weights}}$$

Total internal weight = total strength weight + total weakness weight = 1

Total external weights = total opportunity weights + total threat weights = 1

The data analysis method to answer the second research objective used the Strengths-Weaknesses-Opportunities-Threats (SWOT) Matrix. The SWOT matrix have used to formulate the strategies needed to achieve a goal, namely studying efforts that have become alternative solutions for managing and developing strategies (Salim & Siswanto, 2019). The method used to answer the last objective was the analysis of the quantitative strategic planning matrix (QSPM). QSPM determined priority strategies that are the primary choice in developing herbal plant farming.

RESULTS AND DISCUSSION

Pace Village, located in Silo District, is the ginger production center in Jember Regency. The Statistics Indonesia of Jember Regency recorded that more than 55% of the total ginger production in Jember Regency came from Silo District. Farmers in Pace Village in the last ten years have been cultivating various herbal plants both as main crops and as intercrops besides coffee cultivation. Even though the potential for developing herbal plants is enormous, herbal cultivation is still second-income farming for farmers. It is because of the lack of information regarding market prospects and post-harvest processing of herbal plants.

Strategy development is a plan to achieve a goal. To determine the proper strategy need to identify internal and external factors that influence herbal farming. Internal and external factors had identified through a discussion process with the Head of Farmer Groups, the local Agricultural Extension Officer, and the Head of Pace Village.

Internal and External Factors in Herbal Plant Farming

Analysis of internal and external factors had formulated through an evaluation matrix. Furthermore, to analyze a herbal plant farming development strategy based on internal and external factors, the Internal-External matrix (IE matrix) was used.

Table 1. Matrix of Internal Factors in the Herbal Plant Farming Development Strategy in Pace Village, Silo District, Jember Regency

No	Internal Factors	Weight	Rating	Weighted Score
Strengths				
S1	Supportive of natural resources	0.165	3.2	0.527
S2	Herbal plants are easy crops to cultivate	0.162	3.1	0.508
S3	Farmers have spacious land for cultivating herbs	0.154	3.0	0.463
S4	Farmers have long experience in cultivating herbs	0.150	2.9	0.437
Weaknesses				
W1	Low productivity of herbal plants	0.096	1.9	0.178
W2	Suboptimal cultivation of herbal plants	0.096	1.9	0.178
W3	Minimum of knowledge of farmers in marketing herbal plant products	0.087	1.7	0.146
W4	Less training to farmers about herbal cultivation	0.091	1.8	0.162
Total		1.000		2.599

Source: Primary data (2021)

Strenghts

a. Supportive of natural resources

Pace Village has located in the highlands, 150 m above sea level, with an average rainfall of 2,000 mm/year and a temperature of ± 20°C. In general, the soil conditions in Pace Village has classified as fertile. Those support farmers to do agricultural activities. The primary agricultural products include coffee, pepper, rubber, and ginger. The land used for plantation and herbal cultivation reaches 1,005 and 448 hectares.

b. Herbal plants are easy crops to cultivate

Farmers' decisions in selecting a commodity had influenced by the ease with which crops to cultivate because it would reduce production risks and increase agricultural productivity cultivate (Anisah & Hayati, 2017). Herbal plants include crops that are easy to grow.

c. Spacious land for cultivating herbs

Farmers have large land and yards for planting various herbal plants. The average area is 0.48 ha, with ginger, turmeric, galangal, and Javanese chili cultivated.

d. Farmers have experience in cultivating herbs

Farmers have experience cultivating herbal plants for 2-10 years. It will support their ability to use technology in their farming. The results are in line with research (Gustiana & Irwanto, 2017), which stated that the higher experience a farmer has, the more supportive the farmer's efforts are in developing farming to be more productive and profitable.

Weaknesess

a. Low productivity

The productivity of herbal farming is still low. The average yield of red ginger is only 5 t/ha, whereas the optimum reach 10-15 t/ha. It is because herbal cultivation is still a secondary farming business considered less profitable than coffee cultivation which is the primary commodity.

b. Suboptimal cultivation system

Herbal cultivation is indeed not optimal because herbal plants are a side commodity considered less profitable to cultivate when compared to coffee commodities.

c. Minimum knowledge of farmers in cultivating herbal plant

Most of the farmers still have limited knowledge of cultivating herbs. Farmers only plant herbs randomly without proper procedures for cultivation. Thus, the resulting production still has low quality, and the amount of production is not continuous.

d. Less training to farmers

Pace Village is a coffee producer in Jember Regency, so the training given to farmers is still related to coffee cultivation. Training for herbal cultivation has not been intensive because herbal farming is still a secondary income. Murdayanti et al. (2021) stated that it is necessary to train farmers to support farming development which will impact increasing farmers' income.

The results of the analysis (Table 1) state that the main strength in the development of herbal farming was supporting natural resources, yet its main weaknesses were low productivity and sub-optimal cultivation systems. The result of calculating the total score of the internal matrix was 2.599. Choirunisa et al. (2021) stated that value was in the average category, which means that farmers have a standard response in taking advantage of strengths and minimizing weaknesses.

Table 2. Matrix of External Factors in the Herbal Plant Farming Development Strategy in Pace Village, Silo District, Jember Regency

No	External Factors	Weight	Rating	Weighted Score
Opportunities				
O1	Processed products from herbal plants	0.247	3.6	0.888
O2	The increasing trend of medical using herbal plants	0.237	3.5	0.819
O3	Local government supports the development of herbal products	0.233	3.4	0.792
Threats				
T1	Unstandardized product because the cultivation is not following SOP/GAP	0.088	1.3	0.133
T2	The threat of pests and diseases that attack herbal plants	0.106	1.5	0.163
T3	The cheap price of herbal products in the market	0.090	1.3	0.118
Total		1.000		2.893

Source: Primary data (2021)

Opportunities

a. Processed products from herbal plants

The local community has made several herbal processed products such as herbal syrup, fresh ginger drinks, herbal soap, and aromatherapy oil (Erdiansyah et al., 2021). The existence of processed products will increase added value and opportunities for herbal farming to continue to develop. The demand for raw materials will continue so that farmers are motivated to continue cultivating herbs.

b. The increasing trend of herbal medicine

Medication using herbal plants is the choice of the community because it is easy, inexpensive, and efficacious (Abu et al., 2021). Perdani et al (2021) stated that this medication has been used from generation to generation and is now becoming a trend in society again due to awareness of a healthy lifestyle during the Covid-19 pandemic.

c. Local government supporting

The Pace Village Government supports the community in developing herbal plant farming. This support is through an appeal to residents to plant herbal plants in their yards and make optimal use of their fields.

Threats

a. Unstandardized product because the cultivation is not under the GAP and SOP

Good Agricultural Practices (GAP) is a way of cultivating herbal plants properly, correctly, and precisely, from pre-planting activities to post-harvest handling. Standard Operating Procedure (SOP) is the implementation of GAP based on its work instructions from pre-planting to post-harvest. The manuals of GAP and SOP for herbal cultivation have not been defined yet. The farmers cultivate their herbal plants still based on their experience. So, the quality of herbal plant products is unstandardized, and it is hard to compete in the market.

b. Pests and diseases attack herbal plants.

Pests on herbal plants include aphids, ants, beetles, thrips, mites, spiders, and yellow caterpillars. The common diseases are leaf spots and attack by the bacteria *Ralstonia solanacearum*, which causes wilt. Symptoms of wilting in ginger plants include yellowing and curling leaves, then the ginger rhizome becomes wrinkled and rots, and the plant eventually dies.

c. Low selling price

Farmers prefer to sell yields to middleman because the village is far from the city center or trade center, about 35 km. The far from the city center causes farmers to have limited access to information and the market (Sunarya et al., 2021). Another reason is that practical, easy, and fast, even though relatively cheap. During the Covid-19 pandemic, the price of small white and giant ginger on the market could reach Rp. 50,000 and Rp. 15,000 per kg, while the farmer's price is Rp. 28,000-30,000 and Rp. 5,000-8,000 per kg.

Based on table 2, the key opportunity in the development of herbal farming was the presence of processed herbal products, and the main threats were pests and plant diseases. The total score of the external matrix was 2.893. This value was included in the average category, in which farmers have a standard response in taking advantage of opportunities and avoiding threats.

Based on table 1 and table 2, the weighting results of the IFE and EFE matrix were 2.599 and 2.893, respectively. This value indicates that herbal plant farming was in region V or defend and maintain position. It seems that farmers have the potential to develop herbal plant farming. Mahanani et al. (2021) stated that strategies in a defend and maintain position were product diversification and market penetration.

Table 3. IE Matrix

		Average of IFE Total Weight		
		Strong 3.0-4.0	**Medium 2.0-2.9**	**Weak 1.0-1.99**
Average of EFE Total Weight	High 3.0-4.0	I	II	II
	Medium 2.0-2.99	IV	V	VI
	Low 1.0-1.99	VII	VIII	IX

Source: Primary data (2021)

Herbal Plant Farming Development Strategy

The further analysis was the SWOT matrix to formulate alternative strategies for herbal plant business development. Based on Rinaldi et al. (2019), there were four strategic groups in the SWOT analysis, and each strategy group had alternative strategies to be formulated for farming development.

Table 4. SWOT Matrix

	Strenghts	**Weaknesses**
	1. Supportive of natural resources 2. Herbal plants are easy crops to cultivate 3. Farmers have spacious land for cultivating herbs 4. Farmers have long experience in cultivating herbs	1. Low productivity of herbal plants 2. Suboptimal cultivation of herbal plants 3. Minimum of knowledge of farmers in marketing herbal plant products 4. Less training to farmers about herbal cultivation
Opportunities	**Strategy of SO**	**Strategy of WO**
1. Processed products from herbal plants 2. The increasing trend of medical using herbal plants 3. Local government supports the development of herbal products	1. Develop the competitive herbal processed products 2. Optimizing herbal production to meet consumer demand	1. Increasing farmers' knowledge regarding the prospects and marketing of herbal plants 2. Conduct training for farmers related to herbal cultivation to optimize the yield
Threats	**Strategy of ST**	**Strategy of WT**
1. Unstandardized product because the cultivation is not following SOP/GAP 2. The threat of pests and diseases that attack herbal plants 3. The cheap price of herbal products in the market	1. Training farmers during cultivation according to GAP/SOP 2. Increasing the skill of farmers to control plant pests that attack herbal plants	1. Optimizing the function of farmer groups in marketing herbal products 2. Establish cooperation or partnerships in marketing herbal plant yields

Source: Research Data, 2021

Priority Strategy for Herbal Plant Farming Development

To determine the priority strategy in the development of herbal plant farming by analyzing the Quantitative Strategic Planning Matrix (QSPM). The preparation of the QSPM analysis was carried out based on the results of the SWOT matrix. The first step in compiling a QSPM was to assign a weight to each internal and external factor. The EFE matrix must be as weight as the IFE matrix. Then was to give an Attractiveness Score (AS). Based on the AS value, the Total Attractiveness Score (TAS) had obtained.

The TAS value had calculated by multiplying the AS value by the weight. Then the total value of TAS had calculated in each column of the QSPM. The total value ranked with the highest value as the primary choice of strategic alternatives. QSPM analysis showed eight alternative strategies formulated in the SWOT matrix, with the highest and lowest TAS scores being 8.365 and 7.361.

Table 5. The Result of QSPM Analysis

Priority to-		Strategy	TAS Value
1	WO1	Increasing farmers' knowledge regarding the prospects and marketing of herbal plants	8.365
2	ST2	Increasing the skill of farmers to control plant pests that attack herbal plants	8.277
3	WO2	Conduct training for farmers related to herbal cultivation to optimize the yield	8.096
4	ST1	Training farmers during cultivation according to GAP/SOP	7.971
5	SO2	Optimizing herbal production to meet consumer demand	7.871
6	WT1	Optimizing the function of farmer groups in marketing herbal products	7.831
7	WT2	Establish cooperation or partnerships in marketing herbal plant yields	7.760
8	SO1	Develop the competitive herbal processed products	7.361

Source: Primary data (2021)

Based on the QSPM, the primary strategy in developing herbal plant farming was to increase farmers' knowledge regarding the prospects and marketing of herbal plants. The results of this QSPM analysis were in line with IE analysis which focuses on the marketing strategy of herbal plant products. This priority strategy was expected to increase farmers' knowledge regarding it so that farmers were motivated to cultivate herbal plants. Theresia et al. (2016) in her research stated that the market has a significantly positive influence on farmers' decisions in running their farming businesses. Siahaan (2021) further explained that farmers would consider market availability in choosing the commodities they cultivate.

The increasing demand for herbal products impacts the country's economic growth positively (Othman et al., 2015). It is also evident from the high interest in cultivation, although the development of herbal products still faces several obstacles

related to cultivation, harvesting, processing, and marketing (Nwafor et al., 2021). Kuswardhani et al. (2021) stated that the biggest obstacle faced by farmers was the lack of knowledge regarding the target market and less intensive promotions. Developing herbal plants with agro-tourism in several regions will be a promising concept in the future. This concept is an innovation for new tourist destinations and a learning space regarding the diversity of herbal plants and their processed products (Farsani, et al., 2018; Jadid et al., 2020; Waruwu et al., 2020). Similar to several previous studies (Kwankhao et al., 2020; Jairu & Acharya, 2022) stated that this concept had a significant impact on the development and increase in farm income.

CONCLUSION

Based on the analysis of internal factors, the results showed that the main strength of the herbal plant business development strategy in Pace Village was the supporting natural resources, and the main weaknesses were low productivity and sub-optimal cultivation systems. Based on the analysis of external factors, the primary opportunity of the herbal farming development strategy was the existence of processed herbal products, and the main threat was pests and diseases of herbal plants. Based on the IE matrix analysis showed that the herbal plant business in Pace Village was in region V with a development strategy. Based on the SWOT matrix, eight alternative development strategies had obtained. The priority strategy selected based on the QSPM analysis was to increase farmers' knowledge regarding the prospects and marketing of herbal plants (WO1).

RECOMMENDATION

Local governments have expected to pay more attention to herbal plant farming due to the potential for abundant resources. So that farmers can increase the production of herbal plants and their income. The weakness of this study was interviewing only 35 respondents, which still does not describe the whole situation. The interviews and short FGDs conducted had not explored the problem in depth. Future researchers can carry out specific research so that the variables become complete and comprehensive.

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