
| RESEARCH ARTICLE

Farming Development Strategies of Purwaceng (*Pimpinella pruatjan* Molk.): Endemic Medicinal Plants in the Dieng Plateau, Central of Java, Indonesia

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| ABSTRACT

Purwaceng is a typical plant that grows in the Dieng Plateau and is efficacious for human health but is still cultivated on a limited basis. This study aims to determine the strategy for developing purwaceng farming in the Dieng Plateau. The study used a survey method. Key informants in this study were purwaceng farmers in Patak Banteng District, Sikunang District, and Batur District, Field Extension Officers from the Angestitani Agricultural Extension Center, Kejajar District, purwaceng processed product entrepreneurs, and the Head of the Batur District Farmer Group. Data collection through interviews and focus group discussions (FGD). Data analysis using the IFE matrix, EFE matrix and SWOT. The study produced 10 alternative strategies that can be applied to the development of purwaceng farming in the Dieng Plateau, namely SO strategies: marketing purwaceng through digital marketing, legal registration of purwaceng processed products, increasing the quantity and continuity of purwaceng crop yields, making purwaceng houses; ST strategies: branding the benefits of purwaceng; WO strategies: formation and strengthening of purwaceng farmer groups, the synergy between government agencies and purwaceng farmers, education of the Dieng Plateau community regarding purwaceng farming; WT strategies: consumer education regarding the benefits of purwaceng, and preparation of Standard Operating Procedures for purwaceng farming. Purwaceng farming in the Dieng Plateau can focus on SO (Strength-Opportunity) strategies by supporting aggressive strategy, namely utilizing existing strengths to take existing opportunities.

| KEYWORDS

FGD, IFE, EFE, SWOT analysis.

| ARTICLE INFORMATION

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1. Introduction

Purwaceng is a typical plant with many benefits for human health, including antioxidant activity (Wahyuningrum et al., 2016). Purwaceng contains monoterpenes, steroids, flavonoids, phenolics, glycosides, saponins, tannins, alkaloids, polyphenols, and sesquiterpenes (Nurcahyanti et al., 2018; Fauzi et al., 2019; Fathonah & Sugiyarto, 2019). Based on tests on mice, purwaceng has the potential for stamina to increase aggressiveness in male mice (Kenedi et al., 2017), and can improve the quality of spermatogenesis (Hardiningsih et al., 2023). All parts of the purwaceng plant, including leaves, stems and roots, are believed by the community to have medicinal properties, and are traditionally used as an aphrodisiac and to increase stamina (Usmiati & Yuliani, 2010), as well as to warm the body, treat strokes and gout (Putri et al., 2021).

Purwaceng grows endemically in the Dieng Plateau of Central Java (Syahid et al., 2005), especially in the Wonosobo Regency and Banjarnegara Regency. Due to the unique nature of purwaceng as a medicinal plant that grows endemically, it was chosen as an icon by Wonosobo Regency. Unfortunately, this plant is naturally difficult to find and is categorized as endangered (Darwati & Roostika, 2016). Although purwaceng is a typical plant and has many benefits, very few farmers cultivate the plant. The results of a preliminary survey in the field showed that no more than 25 farmers in the Dieng Plateau were farming purwaceng.

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Many processed products from purwaceng plants have developed in the community. Some forms of purwaceng processing are purwaceng tea, purwaceng coffee, and purwaceng milk. All of these products are already known to the public along with the development of the tourism sector in Dieng (Wibowo et al., 2019). The growing purwaceng processing industry has increased the demand for purwaceng as a raw material for products. Due to its active ingredient content which has medicinal properties, the purwaceng plant also has great potential as a raw material for herbal medicine which is an alternative to synthetic chemical drugs. (Bangun et al., 2021). The prospect of cultivating medicinal plants cannot be separated from the development of the traditional medicine and herbal medicine industry both at home and abroad which is driven by the lifestyle of modern society that is oriented towards back to nature, in addition to the development of innovations in health drink products. Based on the things that have been described, it is necessary to study how to develop a purwaceng farming business strategy to increase community income while preserving the existence of purwaceng as an endemic plant in the Dieng Plateau.

2. Methodology

The research was conducted in the Dieng Plateau in October 2023–February 2024, using a quantitative descriptive method. The descriptive method was chosen because with this method the researcher can describe, reveal and depict the phenomena studied in the field comprehensively, broadly and in-depth (Sugiyono, 2022). Data were collected objectively using interview techniques, with a quantitative assessment approach based on the set score values. In-depth interviews were conducted to collect the data needed for the study with several key informants (Afifudin & Saebani, 2018; Sugiyono, 2022), which included purwaceng farmers in Patak Banteng District, Sikunang District, and Batur District consisting of purwaceng farmers. In addition to farmers, key informants came from the Angestitani Agricultural Extension Center (BPP) of Kejajar District, purwaceng processed product entrepreneurs, and the Head of the Batur District Farmer Group. The credibility of the data was analyzed using source triangulation techniques (Sugiyono, 2022) by comparing data from different sources. Data collection was also carried out through focus group discussions (FGD), to obtain in-depth, specific information, and answer the problem as a whole with several people (Ghazali, 2021; Zulkarnain & Gusti, 2020), namely farmer representatives, farmer group leaders, business actors, and the local Agriculture Service.

The data analysis method is carried out in several stages. First, identify internal factors consisting of strengths and weaknesses, then identify external factors consisting of opportunities and threats. Second, assess internal factors by entering strengths and weaknesses into the Internal Factor Evaluation (IFE) matrix, then give a score to each factor based on data obtained in the field. Third, assess opportunities and threats in the External Factor Evaluation (EFE) matrix, then give a score. Fourth, formulate alternative strategies using the Strengths-Weaknesses-Opportunities-Threats (SWOT) matrix. Fifth, compile a synthesis of the Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS) matrices into the grand strategy matrix.

3. Results and Discussion

3.1 Characteristics of farmers in the Purwaceng farming business

The average age of purwaceng farmers is 52 years, which is a productive group, so they are still able to make good decisions in their farming business. On average, they have had 9 years of education or the equivalent of junior high school education. Farmers have been running purwaceng farming for an average of 6 years, so they have experienced and understood various problems related to plant cultivation, post-harvest handling, and marketing of the results. The longer the experience, the better understanding they will have regarding purwaceng farming. Farmers cultivate purwaceng on land with an average area of 0.1769 ha. The land area is relatively narrow because purwaceng is not the main commodity cultivated by farmers (Indirasari et al., 2024).

3.2 Identification of internal and external factors

Based on observations and literature studies, several internal and external factors were found that affect purwaceng farming. These internal factors are things that are strengths and weaknesses, while external factors are opportunities and challenges faced in purwaceng farming. The things that are strengths are: a) Purwaceng is an endemic plant in the Dieng Plateau, b) Plant maintenance is easy to do, c) Low production costs, and d) High selling prices.

Purwaceng is a plant that can grow in a limited environment, which naturally grows well in the Dieng Plateau at an altitude of around 2000 meters above sea level and the Andosol soil type which is volcanic soil with a high mineral content (Gani et al., 2021). These environmental conditions are very suitable for cultivating purwaceng because it has naturally adapted over a long period, and the Dieng Plateau has a fairly high sulfur content so that purwaceng can grow optimally. Efforts to cultivate this plant outside Dieng have also been carried out but the results were not as expected (Widodo et al. 2018). Routine maintenance is carried out by cleaning weeds around the plantation once a week. According to Fathonah & Sugiyarto (2009) to avoid chemical contamination, purwaceng cultivation is usually not given chemical fertilizers and pesticides. All parts of the purwaceng plant are used for health purposes, so in cultivation, only organic fertilizers are given in a limited manner during land processing, in the form of compost or manure. This makes plant care easy and farming costs low. Indirasari et al. (2024) stated that the cost of purwaceng farming in 1 planting season is IDR 35,847,805.00/Ha with an R/C value of 12.25. Purwaceng is usually sold in the form of dried herbs with an average market price of IDR 50,818.00/kg. This selling price is quite high when compared to other types of medicinal plants.

Some of the weaknesses in purwaceng farming are: a) The age of the plants ready for harvest is quite long, b) Seedlings/seedlings are difficult to obtain, c) There is no SOP for purwaceng cultivation, d) Post-harvest handling is still limited, e) Difficulty in selling, f) The number of purwaceng farmers is small, g) There are no purwaceng farmer groups, h) Farmers do not receive assistance from related agencies.

Purwaceng plants from sowing seeds to mature plants ready for harvest take about 7-8 months, twice the time needed to cultivate other annual horticultural plants. In addition to the long age of the plant, the availability of purwaceng seeds is also very limited because the seeds are very small, around 1-2 mm and usually fall off naturally when they dry, making it difficult for farmers to harvest the seeds as planting material. Farmers also have difficulty in terms of seedling cultivation because the size of the seeds is very small. The performance of purwaceng plants in the early germination and vegetative phases look like weeds in general, making it difficult for farmers to distinguish them from weeds around the plants. Weeding activities that are not careful and careful are very risky to damage purwaceng plant seeds. Guidelines for purwaceng cultivation are also not yet available, so the standard cultivation techniques and post-harvest handling are not yet known to produce quality purwaceng. Limited post-harvest handling causes a decrease in quality before the product is marketed. When farmers harvest, they often have difficulty selling, while with limited post-harvest handling the product cannot be stored for a long time. The unavailability of cultivation guides and the lack of understanding of farmers about the characteristics of purwaceng plants, coupled with various difficulties, have caused not many farmers to want to cultivate purwaceng, so the number of purwaceng farmers is very small. This is also what causes the absence of purwaceng farmer groups. What is more concerning is that there are no programs from related agencies that support the assistance of these farmers.

Regarding external factors, there are at least two quite promising opportunities, namely: a) Diverse post-harvest processing innovations and b) A still large market (especially the export market). Several processed products made from purwaceng that are already circulating in the market are purwaceng powder, tea, coffee, and milk enriched with purwaceng in the form of ready-to-brew and consumed (instant) packaging. Purwaceng, which is harvested from all parts of the plant, can be sorted and processed as raw materials or used as mixed ingredients for products in various forms of preparation, both solid and liquid, and packaged in various ways to facilitate storage, consumption, distribution, and marketing. About the characteristics of these products, there is an opportunity to be marketed not only in the local and national (domestic) and global markets. Based on BPS, the export volume of medicinal plants, aromatics and spices in 2022 reached 274,609.8 tons and in 2023 reached 289,390.3 tons, an increase of 5.38%. This shows that there are still opportunities for the export market for medicinal plant products.

In addition to the promising opportunities, purwaceng farming also faces challenges, namely: a) Farming land that is easily eroded, b) Product prices falling during harvest, and c) Negative stigma from the community regarding the efficacy of purwaceng. Purwaceng is generally cultivated on land at an altitude of more than 1700 meters above sea level, the topography of the land tends to be undulating with a slope of more than 70%. The type of Andosol umbric soil at a depth of 0-32 cm has a weak structure and fine grains, loose consistency, and is slightly sticky and slightly plastic (Gani et al. 2021). Purwaceng is a type of plant that is harvested from all parts of the plant including the roots, so that the purwaceng cultivation land will be dismantled at harvest time. This condition is very risky to cause erosion, which in the long term will reduce soil fertility and trigger landslides. The seeds of the purwaceng plant have a dormancy period so that they naturally begin to germinate in the field during the rainy season so that they can be harvested at the end of the dry season or around September-October. The life cycle of the purwaceng plant makes it so that the harvest occurs simultaneously so that the price of the product falls. Purwaceng is generally known to the public as a plant that is efficacious for increasing stamina and sexual desire, especially for men. This creates a negative stigma against the product, considering that only people who need it specifically will buy purwaceng products.

3.3 Evaluation of Internal and External Factors using the IFE and EFE Matrix

Based on the results of field identification, for the development of purwaceng farming in the Dieng Plateau, four strength factors and eight weakness factors were found. The results of the IFE matrix analysis of purwaceng farming which are classified as strength factors and weakness factors are presented in Table 1.

Based on the results of the IFE matrix analysis, the factor "easy plant care" (0.988) is the strength factor with the highest score. Purwaceng plant care is easier than other types of plants such as horticulture, because it does not require artificial chemical fertilizers and pesticides, and does not require special treatment. Routine care of purwaceng plants is mainly watering and cleaning weeds around the plants. This is one of the greatest strengths of purwaceng farming because it can cut labour costs.

The main weakness factor in purwaceng farming is the factor "Seedlings are difficult to obtain" (0.641) which has the highest score. Purwaceng plant nurseries require skills and experience because when the seeds start to grow, the morphology of the plant is similar to weeds in general so it is difficult to identify, it requires a nursery time of about two to three months so that it can be

transplanted to the land for plant maturity. This often causes the nurseries carried out by farmers to fail, so that during the purwaceng planting season there is often a shortage of seedlings.

Table 1. Internal Factor Evaluation (IFE) Matrix

Code	Internal Factor	Weighting (A)	Rating (B)	Score (AxB)
<i>Strength Factors (S)</i>				
S1	Purwaceng is an endemic plant in the Dieng Plateau	0,094	9	0,818
S2	Plant maintenance is easy to do	0,110	9	0,988
S3	Low production costs	0,098	9	0,883
S4	High selling prices	0,110	7	0,771
Sub Total		0,412		3,460
<i>Weakness Factors (W)</i>				
W1	The age of the plants ready for harvest is quite long	0,073	9	0,631
W2	Seedlings are difficult to obtain	0,101	6	0,641
W3	There is no SOP for purwaceng cultivation	0,062	6	0,392
W4	Post-harvest handling is still limited	0,096	6	0,579
W5	Difficulty in selling	0,094	3	0,281
W6	The number of purwaceng farmers is small	0,069	6	0,412
W7	There are no purwaceng farmer groups	0,064	3	0,171
W8	Farmers do not receive assistance from related agencies	0,029	1	0,029
Sub Total		0,588		3,136
Total		1,000		6,596

Source: Primary data analysis (2024)

Based on the results of field identification, for the development of purwaceng farming in the Dieng Plateau, two opportunity factors and three threat factors were found. The results of the EFE matrix analysis of purwaceng farming which are classified as opportunity factors and threat factors are presented in Table 2.

The opportunity factor with the highest score is "post-harvest processing innovations that are still diverse" (2.343). Purwaceng farming will be able to develop better if it can take advantage of these opportunities. Purwaceng is a nutritious plant that can be utilized from the leaves, stems, the roots. Purwaceng can be processed into raw materials and additional ingredients in coffee, milk, and tea products, or simply dried and then made into purwaceng powder products. Purwaceng can still be processed again into various products that certainly have economic value. The existence of various post-harvest processing innovations will also develop the purwaceng processing industry so that the demand for purwaceng as a raw material can increase.

Table 2. External Factor Evaluation (EFE) Matrix

Code	External Factor	Weighting (A)	Rating (B)	Score (AxB)
<i>Opportunities Factors (O)</i>				
O1	Diverse post-harvest processing innovations	0,260	9	2,343
O2	A still large market (especially the export market)	0,226	9	2,033
Sub Total		0,486		4,376
<i>Threat Factors (T)</i>				
T1	Farming land that is easily eroded	0,086	3	0,256
T2	Product prices fall during harvest	0,170	5	0,908
T3	Negative stigma from the community regarding the efficacy of purwaceng	0,258	9	2,322
Sub Total		0,514		3,486
Total		1,000		7,862

Source: Primary data analysis (2024)

The factor of “negative stigma of society regarding the efficacy of purwaceng” (2.322) has the highest score as a threat factor for purwaceng farming in the Dieng Plateau. Purwaceng is more commonly known by the public as a sexual stamina drug for men, this becomes a negative stigma on the efficacy of purwaceng. The efficacy of purwaceng is very diverse for human health, but this is not widely known by the public so purwaceng products are not in great demand by women. This negative stigma makes market segmentation seem to be specifically for men only so that purwaceng products are not easily sold which causes purwaceng farming businesses not to develop.

3.4 Alternative Strategies based on SWOT Analysis

The results of the SWOT analysis (Table 3) show that 10 alternative strategies can be used for the development of purwaceng farming businesses, including four strengths-opportunities (SO) strategies, one strengths-threats (ST) strategy, three weaknesses-opportunities (WO) strategies, and two weaknesses-threats (WT) strategies.

3.4.1 Strengths-Opportunities (SO) Strategy

3.4.1.1 Alternative SO1. Purwaceng marketing through digital marketing

This strategy is oriented towards a wider purwaceng marketing reach. This can take wider market opportunities and allows for increased innovation in purwaceng product processing. Digital marketing is one of the marketing media that can reach a wider market at any time so that it can increase sales volume and information related to product development (Susanto et al, 2020; Hasiholan & Amboningtyas, 2021; Melandi et al, 2023). The strengths of the purwaceng farming business, where easy maintenance, minimal costs, high selling prices and local plants of the Dieng Plateau allow farmers to focus more on post-harvest activities such as processing purwaceng products and marketing by utilizing digital marketing technology, so that the purwaceng farming business can develop even better. Digital marketing allows for cost optimization, increasing income and product value (Sokolova & Titova, 2019). Technological developments also have an impact on marketing, namely digital marketing which can expand marketing functions and make it easier to identify customer needs and wants. Product innovation and marketing innovation can increase consumer purchasing interest and increase product selling value. Media that are widely used for digital marketing are e-mail, applications, social media, and websites. In the case of herbal medicine products, which are traditional drinks, they can compete and survive the economic crisis through product innovation and marketing innovation through the use of digital marketing which continues to be developed (Karlina & Sya'roni, 2021).

3.4.1.2 Alternative SO2. Legal registration of processed purwaceng products

Registering the legality of product brands can provide support for owned businesses, avoid product counterfeiting and as a product identification mark that contains the authenticity and quality of the product (Kuasa et al, 2022); as well as legal protection for the product (Adam, 2023). Registering the legality of processed purwaceng product brands will make the public more confident that the product is indeed processed from purwaceng. This legitimizes the quality and efficacy of the purwaceng plant. So that marketing purwaceng products will be easier and can reach a wider market.

Farmers who process purwaceng need to register trademarks for the products they produce. The purpose of trademark registration is so that the registrant can obtain status as the first registrant until there is evidence to the contrary from others (Semaun, 2016). Trademark registration is carried out to provide proof of legitimate trademark ownership to obtain guaranteed protection and legal certainty for a trademark (Adam, 2023). In addition, products with registered brands also provide certainty of product authenticity and can increase consumer confidence in the product. Farmers who run household-scale businesses to produce processed purwaceng are required to create a Business Identification Number (NIB) and Household Industry Product (P-IRT). Based on the Regulation of the Food and Drug Supervisory Agency (BPOM) Number 22 of 2018, a P-IRT certificate must be owned by business actors who produce manually or semi-automatically. After both certificates are owned, farmers who are business actors are required to apply for a halal certificate for the products traded. Purwaceng processed products that have been certified P-IRT and halal, accompanied by a registered brand, can be marketed widely. The market will be wider because of the sense of trust in products that have been registered because registered products are more trusted, different from other products, can be licensed to circulate nationally and internationally and prevent counterfeit products from circulating (Arafat, 2021).

Table 3. SWOT Analysis Quadrants

<p style="text-align: center;">Internal Factors</p> <p style="text-align: center;">External Factors</p>	<p>Strengths</p> <p>S1. Purwaceng is an endemic plant in the Dieng Plateau S2. Plant maintenance is easy to do S3. Low production costs S4. High selling prices</p>	<p>Weaknesses</p> <p>W1. The age of the plants ready for harvest is quite long W2. Seedlings are difficult to obtain W3. There is no SOP for purwaceng cultivation W4. Post-harvest handling is still limited W5. Difficulty in selling W6. The number of purwaceng farmers is small W7. There are no purwaceng farmer groups W8. Farmers do not receive assistance from related agencies</p>
<p>Opportunities</p> <p>O1. Diverse post-harvest processing innovations O2. A still large market (especially the export market)</p>	<p>SO1. Purwaceng marketing through digital marketing SO2. Legal registration of processed purwaceng products SO3. Increasing the quantity and continuity of purwaceng crop yields SO4. Making a purwaceng house</p>	<p>WO1. Formation and strengthening of purwaceng farmer groups WO2. Synergy between government agencies and purwaceng farmers WO3. Education of the Dieng Plateau community regarding purwaceng farming</p>
<p>Threats</p> <p>T1. Farming land that is easily eroded T2. Product prices fall during harvest T3. Negative stigma from the community regarding the efficacy of purwaceng</p>	<p>ST1. Branding the efficacy of purwaceng</p>	<p>WT1. Consumer education regarding the efficacy of the purwaceng plant WT2. Preparation of Standard Operating Procedure (SOP) for purwaceng farming</p>

Source: Primary data analysis (2024)

3.4.1.3 Alternative SO3. Increasing the quantity and continuity of purwaceng crop yields

Farmers' management and institutions need to be improved. This is to maintain the quantity of production and can be continuous over time so that export potential can be utilized as well as possible (Ariningsih et al, 2021). Providing training and socialization related to integrated farming in its cultivation, post-harvest processing and effective marketing can help maintain the quality, quantity and continuity of production (Syachruddin et al, 2019). Applying the right cultivation techniques in terms of farming inputs can maintain the quantity and quality of production by market demand, continuity can also be maintained with this (Tanari & Sepatondu, 2020); and by reducing the inefficiency of cultivation techniques (Onumah et al, 2018).

Purwaceng, which has the advantages of low production costs, easy maintenance and high selling prices, needs to make a planting schedule to maintain the continuity of the availability of purwaceng. In addition, farmer groups can also be formed so that planting and harvest schedules can be arranged, standardization of cultivation technology to increase the quantity and continuity of results, maintain uniform quality of results and according to the standards required by the market. The scheduling of planting time can maintain the stock of purwaceng production. This can prevent the selling price of purwaceng from falling during harvest. Scheduling in production needs to look at the commodities being cultivated so that a planting schedule can be determined that is aligned with the harvest time when demand and prices for the product are high (Waridin & Kirana, 2019).

The majority of people in the Dieng Plateau who plant potatoes can make the land easily eroded because of the sloping position of the land. Given the age of the purwaceng plant until it is ready to be harvested is quite long, it reduces the frequency of soil cultivation which helps the land not to be easily eroded. In addition, arranging the harvest schedule can also overcome land that is easily eroded and good planting scheduling can reduce production risks and make it easier to know the age of the plant ready

to be harvested (Syamruddin, 2020). Increasing production quantity with production continuity with maintained quality results can guarantee the fulfilment of the needs of the purwaceng processing industry.

The processing industry and export markets require stable supply and guaranteed availability of products with quality that meet standards to meet the needs of their consumers. Increasing the quantity and quality of purwaceng results is determined by the applied plant cultivation technology. Good Agriculture Practices (GAP) is a guide on how to carry out good, correct, and environmentally friendly cultivation that is safe for consumption (Nahraeni et al., 2020). In the process of cultivating purwaceng, it is necessary to apply GAP (Good Agricultural Practices) to produce competitive products, which have the advantage that the products are safe for consumption, and of good quality because they are produced in an environmentally friendly manner. In addition, the application of GAP can also increase production quality, production efficiency and optimization of the use of natural resources, and can encourage farmers/producers to have a responsible mental attitude towards products, health, personal safety and the environment.

3.4.1.4 Alternative SO4. Making a purwaceng house

The purwaceng house is a tourist attraction available in the Dieng Plateau because purwaceng is a local plant that grows in the area. Purwaceng cultivation can be carried out in it, which will also provide education to distinguish between real and fake purwaceng plants. In addition to cultivation, there is also a mini cafe that provides various kinds of purwaceng processed products, so that consumers can also enjoy purwaceng products directly. The herbal café is an educational medium that can provide information on the types of medicinal plants and their properties as well as how to cultivate them, which will later become a local tourist attraction (Mistriani & Helyanan, 2022). The purwaceng house can increase the branding which can later increase various kinds of processed products and increase sales. Creating an outlet or shop that sells typical products from the area is a special attraction for tourists who come to visit, so marketing can be even wider and profits can also increase with the presence of shops/outlets in tourist areas (Yudhiantoro & Pujiastuti, 2015). Local product outlets that sell products in tourist areas can increase employment opportunities for people in the area which will later increase community income (Anggraini, 2023; Pamungkas & Mukhtali, 2015). The development of local products in tourist areas can increase visitor attraction, this must also be accompanied by increasing existing human resources with education and training so that it can continue to be sustainable (Tjilen et al, 2023; Suranny, 2021).

3.4.2 Strengths-Threats (ST) Strategy

3.4.2.1 Alternative ST1. Branding the efficacy of purwaceng

The public's ignorance about the efficacy and benefits of the purwaceng plant makes people not cultivate it. This risks causing plant scarcity, so education is needed regarding the efficacy and benefits of the plant correctly so as not to cause a misunderstanding of the efficacy of the plant (Mistriani & Helyanan, 2022), in addition to being able to dispel the negative stigma where the efficacy of purwaceng is only as a stamina drug for men. People who already understand the efficacy of purwaceng can help in branding the correct efficacy of purwaceng to eliminate the negative stigma. Education can attract public trust in the reliability of the plant or product, which can later build branding in the public eye regarding the appeal of the product (Oktaviani, 2018).

3.4.3 Weaknesses-Opportunities (WO) Strategy

3.4.3.1 Alternative WO1. Formation and strengthening of purwaceng farmer groups

Farmer groups have a major role in farmers developing their farming businesses, increasing income, and reducing production costs, especially labour, This is also felt by farmers who are members of farmer groups because the government assist such as agricultural technology if there are farmer groups (Jati et al, 2022). The existence of farmer groups can help overcome the weaknesses of purwaceng farming in the Dieng Plateau. With farmer groups, the agency will be able to help provide the needs of purwaceng farming in the group. Difficulties in sales can also be overcome because purwaceng farmers can increase so that they can work together to produce and sell purwaceng products.

The existence of farmer groups can provide good and correct cultivation knowledge and skills as well as the use of technology and production inputs effectively and efficiently, and easier product sales such as establishing partners, especially farmer groups that focus on certain commodities (Nazriati et al, 2021). Many purwaceng farmers in the Dieng Plateau still do not understand purwaceng cultivation properly, so guidance related to purwaceng cultivation can be carried out. Especially at the nursery stage, which needs to be guided so that farmers do not experience failure in the nursery so that the need for seeds during the planting period can be met. Guidance at the nursery stage is very important to maintain the sustainability of farming businesses so that with guidance, farmers are expected to be able to maintain seedlings properly and correctly which can later become the centre of the plant (Kusumawaty et al, 2024). If purwaceng cultivation can run well, it can reach wider sales.

3.4.3.2 Alternative WO2. Synergy between government agencies and purwaceng farmers

The government's lack of attention to farmers means that the government's role in empowering farmers is still not optimal so the development of people's standard of living is hampered, and this must be improved (Raintung et al, 2021). Although the lack of attention from the agency is the smallest weakness factor considered by farmers, the synergy between the two must be established. Farmers consider that purwaceng farming without attention from the agency can still run well, farmers' trust in the agency is also very low because so far the response has not been reciprocal between the agency and farmers. This condition must be fixed by both farmers and government agencies which are expected to be able to develop purwaceng farming in the Dieng Plateau. Policies related to input subsidy assistance can increase farmer productivity, especially policies that must be adjusted for poor resource farmer households (Karata, 2024). Input subsidies can be in the form of greenhouses or screen houses which are useful as nurseries that better protect purwaceng seedlings from direct rainwater splashes considering the shape and size of the seedlings are very small.

3.4.3.3 Alternative WO3. Education of the Dieng Plateau community regarding purwaceng farming

Comparing different commodity farming businesses can be a consideration for farmers in choosing the commodities they will cultivate, of course by comparing input costs, revenues, income and efficiency (Guampe et al, 2022). The majority of the Dieng Plateau community cultivates potatoes. In terms of farming calculations, when compared, purwaceng farming is more profitable than potato farming. The education related to the calculation of purwaceng farming can attract farmers to cultivate it so that purwaceng farmers can increase. Moreover, there are very few purwaceng farmers, so only a few people are involved in purwaceng cultivation and preservation efforts. Socialization and education efforts in the community can be carried out by encouraging the use of yards by planting plants that are beneficial for health, such as purwaceng, which is often known as Family Medicinal Plants (TOGA). Education can be carried out through PKK mothers' meetings or Integrated Service Posts (Posyandu), which are held routinely every month at the Community Association (RW) level. In limited land conditions, purwaceng plants can be cultivated hydroponically. Batubara et al. (2023) explained several hydroponic systems that can be used, namely the substrate hydroponic system with non-recirculation and recirculation drip irrigation, and the Nutrient Film Technique (NFT). The combination of the substrate hydroponic system with non-recirculation drip irrigation and low nutrient concentrations produces extracts with high phenolic and flavonoid content. Purwaceng root extract from non-recirculation with high nutrient concentrations produces high antioxidant activity.

3.4.4 Weaknesses-Threats (WT) Strategy

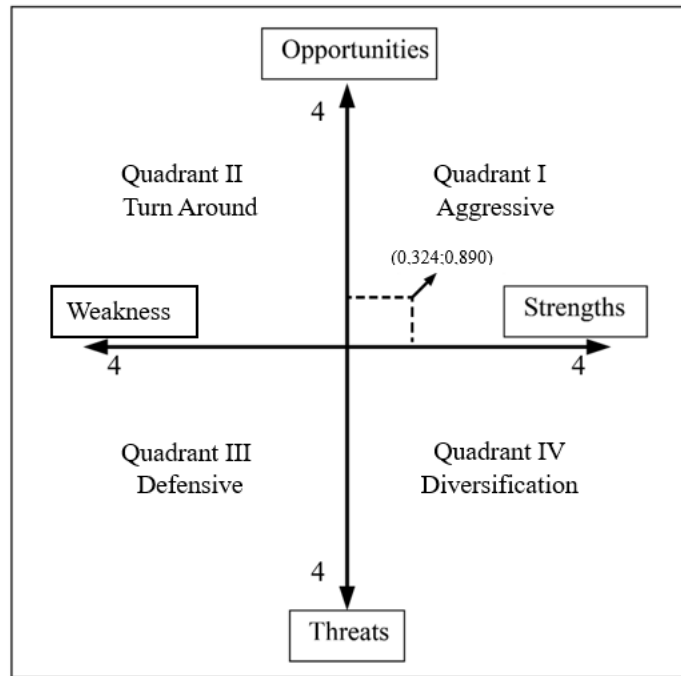
3.4.4.1 Alternative WT1. Consumer education regarding the efficacy of the purwaceng plant

Ignorance of the efficacy of the plant makes people not cultivate the plant and makes the plant almost extinct, so education is needed regarding the efficacy of the plant correctly so as not to cause misunderstanding of the efficacy of the plant (Mistriani & Helyanan, 2022). If the people of the Dieng Plateau understand the efficacy of the purwaceng plant as a whole, then the negative stigma regarding the efficacy of purwaceng can be reduced. It is prioritized first for the community to get used to consuming it as a herbal medicine or consuming it daily as a body warmer. People who already love purwaceng products and consume them will introduce the efficacy of purwaceng to people around them through word-of-mouth marketing. This can also develop various kinds of purwaceng preparations to be consumed every day.

3.4.4.2 Alternative WT2. Preparation of Standard Operating Procedure (SOP) for purwaceng farming

SOP (Standard Operating Procedure) ensures that a cultivation activity can run as it should so that it will generate knowledge to carry it out according to the rules so that failure does not occur (Widodo & Mutaqi, 2022). SOP is formed so that farming can run sustainably and in its implementation, guidance is needed for farmers so that the objectives of forming SOP can be achieved (Arzam et al, 2023); and obtain stable harvest results and quality (Mykhailenko et al, 2020). The existence of SOP for purwaceng farming can help farmers to cultivate purwaceng properly. This can help farmers avoid cultivation errors that can harm farmers. The quality and quantity of purwaceng can also be maintained properly with the formation of an SOP for purwaceng.

The results of the assessment on the IFE and EFE matrices are then synthesized into a grand strategy matrix as presented in Figure 1. The results of the grand strategy matrix synthesis show that if in quadrant I, the focus is on the strength-opportunity (SO) strategy by supporting an aggressive strategy, if in quadrant II, the focus is on the weakness-opportunity (WO) strategy by supporting a turn-around strategy, if in quadrant III, the focus is on the weakness-threat (WT) strategy by supporting a defensive strategy, and if in quadrant IV, the focus is on the strength-threat (ST) strategy by supporting a diversification strategy (Harisudin et al, 2022; Islachudin et al, 2024). Figure 1 shows that the purwaceng farming development strategy in the Dieng Plateau can focus on the SO (Strength-Opportunity) strategy by supporting an aggressive strategy, namely taking existing opportunities with the strengths possessed. In this case, the prioritized strategy to be implemented first is to market purwaceng through digital marketing (SO1), register the legality of processed purwaceng products (SO2), increase the quantity and continuity of purwaceng crop yields (SO3), and build a purwaceng house (SO4).



Source: Primary data analysis (2024)

Figure 1. Grand Strategy Matrix for Purwaceng Farming Business Development

5. Conclusion

The study resulted in 10 alternative strategies that can be applied to the development of purwaceng farming in the Dieng Plateau, namely SO strategy: marketing purwaceng through digital marketing, legal registration of processed purwaceng products, increasing the quantity and continuity of purwaceng crop yields, building purwaceng houses; ST strategy: branding the benefits of purwaceng; WO strategy: formation and strengthening of purwaceng farmer groups, synergy between government agencies and purwaceng farmers, educating the Dieng Plateau community about purwaceng farming; WT strategy: educating consumers about the benefits of purwaceng plants, and preparing SOPs for purwaceng farming. Purwaceng farming in the Dieng Plateau can focus on the SO (Strength-Opportunity) strategy by supporting an aggressive strategy, namely utilizing existing strengths to take advantage of existing opportunities.

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