

Plant Business Mapping Young Plants Agriculture Group In West Dumai District

by Melliana Melliana

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Plant Business Mapping Young Plants Agriculture Group In West Dumai District

Melliana¹, T Mesra²

^{1,2}Department of Industrial Engineering, Sekolah Tinggi Teknologi Dumai

E-mail: mellianna52@gmail.com

Abstract. Dumai City is a city with a lot of potential for progress and development, one of which is the agricultural sector. Specifically, for young plants plants, the people of Dumai City tend to plant horticultural crops and crops. Errors in choosing the wrong type of plant can cause dissatisfaction in producing production. The AHP method is used to select suitable types of plants in Dumai City, the SWOT method is used to develop selected alternatives. The alternative chosen using the AHP method for young plants is corn. The strategy for developing the SWOT method is in quadrant 1, which is progressive, so it is likely that this type of plant will develop in the future

1. Introduction

Indonesia is known as an agrarian country with most of the population living as farmers. One of the ways to increase population income is the government's support for the agriculture sector. Agricultural products will not only strengthen the nation's economy, but will also increase state income. Dumai City is a city with a lot of potential that is growing and developing. One of them is the agricultural sector that is developing at this time.

During this time in the Dumai region, the agribusiness and agro-industry practitioners carried out many agricultural activities in various crops such as crops and horticultural crops. Errors in choosing the wrong type of plant can cause dissatisfaction in producing production. To get the right type of plants to be developed in Dumai City, research needs to be done using the AHP and SWOT methods.

Formulation of Problem, based on the background above, the problem formulation is what types of plants are suitable to be developed by the AHP and SWOT methods in Dumai City.

Research purposes, the purpose of this study is to determine the suitable type of plants and determine the strategies used in the development of alternative selected plants.

2. Theoretical

2.1. Young Plant

Young plant is a word derived from the Sanskrit word palawidja, which means the second plant. So young plants can be interpreted as the second type of staple / food crop after rice. Young plant is able to iveon dry land so that it does not really need water, especially when irrigation is difficult to provide water to the land [1].



2.2 The Role of Agribusiness in Development

Agribusiness is an interconnected agricultural system from upstream to downstream systems that uses existing resources with the aim of making maximum profits [2]. The agricultural sector plays an important role because it is able to provide employment, is able to provide a diversity of food menus and greatly influences the success of national development.

2.3 Analytical hierarchy process (AHP) method.

The analytical hierarchy process was developed by [3] of the Wharton School of Business in the 1970s to organize information and judgment in choosing the most preferred alternative. By using AHP, a problem will be solved in an organized manner, so that it can be expressed to make effective decisions on the problem. Complex issues can be simplified and accelerated the decision making process [4]

The working principle of AHP can be done with the following steps:

- Arranging the hierarchy



Figure 1. Examples of hierarchical structures in AHP

- Assessment of criteria and alternatives
Criteria and alternatives are assessed through pairwise comparisons. According to [5], for various problems, a scale of 1 to 9 is the best scale in expressing opinions. The values and definitions of qualitative opinions from the Saaty comparison scale can be seen in the following table:
- Determination of priorities
For each criterion and alternative, pairwise comparisons are needed. The relative comparison values are then processed to determine the relative rank and all alternatives. Both qualitative criteria, and quantitative criteria, can be compared with judgments that have been determined to produce weight or priority [6]
- Settlement by matrix manipulation
The matrix will be processed to determine the weight of the criteria, namely by determining the eigenvector (eigenvector) value. The procedure for obtaining eigenvalues is Squaring the matrix. Count the number of values from each row, then do it with normalization. Stop this process, if the difference between the sum of two consecutive calculations is smaller than a certain value limit. Consistency ratio [7]. Consistency Ratio is a parameter used to check whether a pairwise comparison has been done consequently or not.

The value of consistency index can be calculated using the formula:

$$CI = \frac{\lambda_{\max} - n}{n-1} \quad (1)$$

To calculate consistency ratio, RI value is needed, which is a random index obtained from the oakride table. The consistency ratio can be calculated by the formula:

$$CR = \frac{CI}{RI} \quad (2)$$

2.4 SWOT Method

SWOT Analysis is the systematic identification of various factors to formulate a company's strategy. This analysis is based on logic that can maximize strengths and opportunities, but simultaneously minimize weaknesses and threats. The strategic decision making process is always related to the development of the company's mission, goals, strategies and policies [8]

SWOT analysis is a method for describing conditions and evaluating a problem, project or business concept based on internal analysis including the assessment of strengths and weaknesses, and external analysis including opportunity factors and challenges (Threat).

According to Rangkuti there are 4 SWOT analysis factors consisting of:

- Strengths (strength).
Company strength is the ability of a company to do something or the characteristics of a company that provides competitive advantage.
- Weakness (weakness).
Weakness is the company's low ability to do something when compared to other companies
- Opportunity (opportunity).
Opportunities are possibilities for developing in the future. Conditions that occur are opportunities from outside the organization, project or business itself.
- Threats (threats)
Is a condition that threatens from the outside. This threat can disrupt the organization, project or business itself.

2.5 SWOT Analysis Basis of Business Strategy

According to prawirosentono and primasari in the book on strategic management and corporate decision making, the meaning of business is related to industry. The difference is that business is a single company, while industrial companies are a group of single companies that produce or sell similar goods [9]

3. Research Methods

3.1. Time and Place of Research

This research was conducted at the Department of Agriculture in the City of Dumai. The data used in this study are primary data that is obtained directly in the Food and Horticultural Plants, farmer groups and consumers, by conducting observations, and interviews using a questionnaire. Secondary data were obtained from the Agriculture Office related to the study.

3.2. AHP method

AHP method is used to select suitable types of crops in the city of Dumai, with the following steps:

- Formulate the problem
To organize information and judgment in choosing the most preferred alternative. By using AHP, a problem will be solved in an organized manner, allowing it to be expressed for making effective decisions
- Arranging the hierarchy
Complex issues can be simplified and the decision making process can be accelerated.

- Weighting of Alternative and Criteria
Criteria and alternatives are assessed through pairwise comparisons, for various problems, a scale of 1 to 9 is the best scale for expressing opinions
- Consistency ratio
For each criterion and alternative, a pairwise comparison is required. The relative comparison values are then processed to determine the relative rank and all alternatives
- Determination of selected alternatives
The matrix will be processed to determine the weight of the criteria, namely by determining the eigenvector value

3.3. SWOT Method

The SWOT method is used to determine the strategy for developing selected plant businesses, with the following steps:

- Determining the type of business to be developed.
- Analysis internal and external factors of the company
- Weighting of internal factors and internal factors
- Develop development strategies based on problems that arise.

4. Discussion Result

4.1 Selection of Plant Types by AHP Method

4.1.1. Research Criteria and Alternatives. The criteria for determining the types of crops are human resources (K1), government programs (K2), cost of rearing / maintenance (K3), resistance to weather / disease (K4), age of productivity (K5), quantity of crop yield n (K6), selling price (K7), and market demand (K8). As an alternative choice is the type of commodity tanaman young plants in the city of Dumai namely cassava / cassava (A1), peanuts (A2), corn (A3), and taro (A4).

The arrangement of the hierarchy can be seen in Figure 1

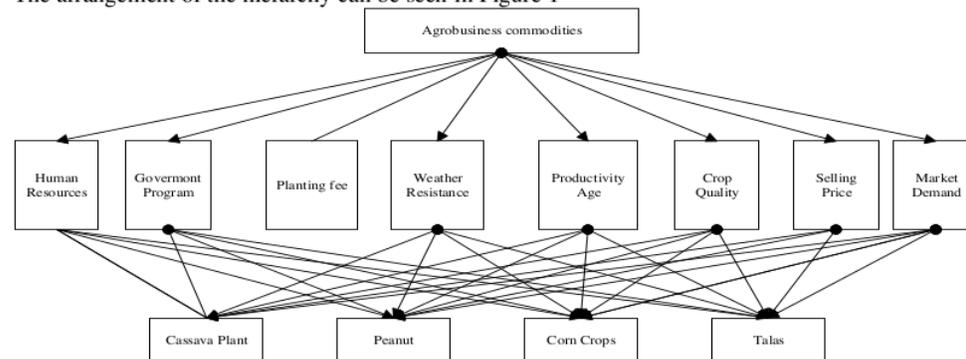


Figure 2. Compilation of young plants plant hierarchy

Table 1. Multiplication weights criteria with alternative weights

Criteria \ Alternative	K1	K2	K3	K4	K5	K6	K7	K8	Ranking
A1	0,054	0,026	0,184	0,034	0,075	0,111	0,181	0,335	0,316
A2	0,493	0,242	0,487	0,520	0,120	0,248	0,262	0,273	0,084
A3	0,084	0,072	0,070	0,148	0,263	0,067	0,071	0,058	0,486
A4	0,301	0,557	0,313	0,097	0,555	0,571	0,540	0,573	0,114

- SWOT Matrix

Table 2. SWOT matrix

	Strength	Weaknees
Analysis SWOT	Availability of land that is still quite extensive	Corn plants are vulnerable to pest attacks
	Yield quality	The age of corn production is quite long
	The number of corn farmers is quite a lot	The price of fertilizer is quite expensive
	Relatively small planting / maintenance costs	Limited skilled personnel / human resources mastering technology
	High motivation and enthusiasm of farmers	Relatively small farmer income
Opportunity	Strategy SO	Strategy OW
The existence of government policies that support	1. Increasing corn crop business land to meet market demand	1. Utilizing private investors for business expansion.
The availability of sea ports as a means of transportation		
Corn market demand is still high	2. utilizing technology and information to expand the market for products.	2. Training and guidance from the government to farmers who have not mastered the technology
Technology and information development		
Opportunities for cooperation with private investors are quite large		
Threat	Strategy ST	Strategy WT
The existence of pests and diseases of corn	Increasing the quality of production to face competition, both from within and from outside the Dumai City area.	1. Optimizing in eradicating pests for good quality corn
The emergence of similar products as competitors		
Changes in weather resulting in decreased production		2. Providing training to farmers to increase corn production.
Increased corn production outside Dumai City		
Dumai city is far from the city that provides factors of production		

4.1.2. Determine Business Strategy for Corn Plants. The results of the internal factor evaluation (IFE) analysis found in table 4.44, it is known that the internal position of corn strength is greater than weakness with a difference of 0.519. Conditions in the calculation of external factor evaluation (EFE) contained in table 4.46, the chance is greater than the threat with a difference of 0.456.

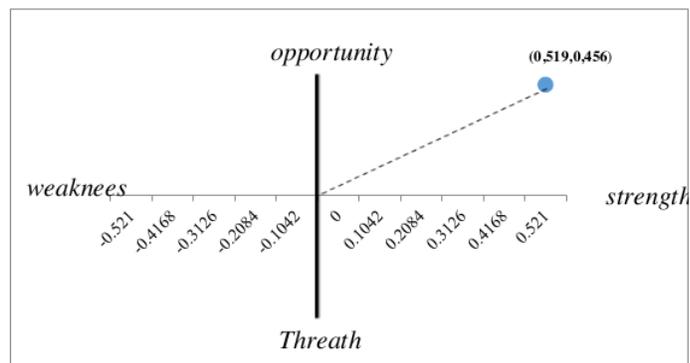


Figure 3. Corn plant business position

Figure 3. shows that corn business is in the quadrant I position (positive, positive), indicating that the strategy given is Progressive, meaning that this business is in prime condition and it is very possible to increase growth and experience maximum progress.

5. Conclusions

Based on the results of this study, the highest alternative for the selection of crops is corn, with a weight value of 0.486. The corn business development strategy in this study is in the position of quadrant I which is progressive, so it is likely that this type of plant will develop in the future.

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