

# Seaweed (*Eucheuma cottonii*) Cultivation Business Development Strategy in Tihi-Tihi Village, Bontang Lestari Village, Bontang Selatan District, Bontang City

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## ABSTRACT

The purpose of this research is analyzing strengths, weaknesses, opportunities, threats and formulate appropriate strategies in developing seaweed cultivation businesses in Tihi-Tihi Village. Strategy formulation using development strategy analysis consisting of SWOT and QSPM analysis. According to the result the priority strategy recommended for the development of seaweed cultivation is to increase production yields and expand cooperative relationships with buyers who will take the seaweed produced.

## INTRODUCTION

The city of Bontang has a potential fisheries resource due to its direct proximity to the Makassar Strait. This geographical condition is what leads its concentrated population to reside along the coastline and work as fishermen and fish farmers. Fishing at sea is the most dominant fishing activity carried out by the community in that area. Additionally, there are also many who engage in fish and seaweed farming, primarily due to the relatively diverse range of catchable species. The fisheries potential in 2017 was recorded at 27,164.30 tons, comprising 20,773.6 tons of marine fisheries production and 6,390.7 tons of aquaculture production (Badan Pusat Statistik Kota Bontang, 2018).

Tihi-Tihi is a floating settlement located in the Bontang Lestari Sub-district, South Bontang District. This village is also a significant seaweed producer, alongside other villages along the coast of Bontang City. The majority of Tihi-Tihi's residents are seaweed cultivators. They primarily focus on seaweed cultivation as their main source of livelihood, given that the village is situated above the sea and possesses waters with potential for seaweed farming. Moreover, this endeavor requires relatively low investment, which has sparked the community's interest in its development.

Due to the lack of data and information related to the formulation of strategies for the development of seaweed farming businesses in Tihi-Tihi Village, the author is intrigued to conduct research with the title: "Development Strategy of Seaweed Farming Business (*Eucheuma cottonii*) in Tihi-Tihi Village, Bontang Lestari Sub-district, South Bontang District, Bontang City."

## METHODOLOGY

The research was conducted in Tihi-Tihi Village, Bontang Lestari Sub-district, South Bontang District, Bontang City, East Kalimantan Province. The research was carried out over a period of 9 months, starting from July 2022 to April 2023. The data used in the study consisted of primary data and secondary data. Primary data was obtained directly through interviews with seaweed farming business owners, covering respondent identities, internal factors (Strengths & Weaknesses), and external factors (Opportunities & Threats). On the other hand, secondary data was sourced from Journals, the Central Statistics Agency of East Kalimantan, the Central Statistics Agency of Bontang City, the Bontang City Communication and Information Office, and previous Theses.

### Sampling Method

The sampling method employed in this research is purposive sampling. According to Nasution (2003), purposive sampling involves selecting samples based on the researcher's considerations. In this study, respondents were chosen based on their competence to provide relevant information and their involvement in 3-4 seaweed farming locations. A preliminary survey indicated a total population of 319 individuals in Tihi-Tihi Village, with 75 individuals engaged in seaweed cultivation. Taking these factors into account, the sample size for seaweed farmers was determined to be 5 individuals. Additionally, there was 1 respondent involved in seaweed collection, 1 community leader, and 1 representative from the Bontang City Fisheries Department.

### Data Analysis Method

The data analysis process begins by identifying and reviewing all the collected data, which is then condensed and organized into SWOT elements. SWOT analysis and the SWOT matrix are employed to compare internal factors, the strengths and weaknesses of the business, as well as external factors, the opportunities and threats to the business. The SWOT analysis format involves selecting 1-5 key factors for each strength, weakness, opportunity, and threat related to the seaweed farming business in Tihi-Tihi Village. The summarized analysis can be found in the table below:

Table 1. SWOT Matrix

Internal Factor (IFAS)	<i>STRENGTH (S)</i>  Determine 5 - 10 internal strength factors	<i>WEAKNESS (W)</i>  Determine 5 - 10 internal weakness factors
External Factor (EFAS)	<i>STRATEGY (S – O)</i> Create a strategy that uses strengths to capitalize on opportunities	<i>STRATEGY (W – O)</i> Create strategies that minimize weaknesses to take advantage of opportunities
<i>THREAT (T)</i> Define 5 - 10 external threat factors	<i>STRATEGY (S – T)</i> Create a strategy that uses strengths to overcome threats	<i>STRATEGY (W – T)</i> Create strategies that minimize weaknesses and avoid threats

Source: Rangkuti, 2001

This matrix clearly illustrates the part of the external opportunities and threats faced adjusted to the strengths and weaknesses possessed. This matrix can produce 4 possible alternative cells, namely:

1. SO (Strengths-Opportunities) strategy This strategy is based on internal strengths to take advantage of the greatest opportunities.

2. ST (Strengths-Threats) Strategy This strategy is made by using the strengths possessed to avoid or reduce the impact of threats.
3. WO (Weaknesses-Opportunities) strategy This strategy is implemented based on the utilization of existing opportunities by minimizing existing weaknesses.
4. WT (Weaknesses-Threats) This strategy is based on defensive activities, namely trying to survive by reducing internal weaknesses and avoiding threats.

As for some of the variables used in SWOT analysis, the following variables are used:

1. Strength (Strength) with variables:
  - a. Strategic location
  - b. use of cheap and simple technology
  - c. sufficient labor available
  - d. availability of seaweed cultivation area and potential.
2. Weaknesses with variables:
  - a. Limited capital
  - b. Limited cultivation area
  - c. Production results are not maximized
  - d. Very few good quality seeds
3. Opportunities with variables:
  - a. High demand
  - b. Export market potential
  - c. High seaweed prices
  - d. Existence of supporting institutions
4. Threats (Threats) with variables:
  - a. Impact of waste from the company
  - b. Natural factors
  - c. Price instability
  - d. Other regional competitors

Table 2. QSPM (*Quantitative Strategic Planning Matrix*)

Num	Factor	Strategy Alternative									
		Weight	SO		ST		WO		WT		
			AS	TAS	AS	TAS	AS	TAS	AS	TAS	
1	Internal Factor										
	a. Strength										
	b. Weakness										
2	External Factor										
	a. Opportunities										
	b. Threats										

Source: David, 2006

The steps in preparing the QSPM (Quantitative Strategic Planning Matrix) are as follows:

1. List internal factors (strengths and weaknesses) and external factors (opportunities and threats) on the left side of the QSPM (Quantitative Strategic Planning Matrix) matrix column.
2. Give a weight to each internal and external factor
3. Review the corresponding matrix from the second step by identifying the alternative strategies that should be implemented.

4. Score the alternatives (AS) with the following score ranges: 1 = not attractive; 2 = somewhat attractive; 3 = reasonably attractive; 4 = very attractive to the alternative strategy.
5. Multiply the weight with the alternative score (AS) on each internal and external factor for each strategy.
6. Sum up all alternative scores (AS)

## RESULT AND DISCUSSION

### Overview of the Research Sites

Geographically, Bontang City is located in the position of 1770 22' - 1770 32' East and 000 01 - 12' LU with an area of 406.70 km<sup>2</sup> which is  $\pm$  90 km from the capital city of Samarinda. The population of Bontang City in 2022 is 183,161 people. The distribution of population in South Bontang Sub-district is 67,866 people (37.05%). The number of residents of Bontang City based on livelihoods if added together between men and women, the total is 91,408 people who work. The religion practiced by the community, where the majority of the population of Bontang City adheres to Islam with a total percentage of 89.85%, Protestantism by 8.17%, Catholicism by 1.75%, Hinduism by 0.16%, and Buddhism by 0.07%.

### Overview of Seaweed Cultivation

The process of selecting the location is the first stage, before conducting seaweed cultivation. Next, the selection of seeds that are of good quality and not damaged, before the seaweed is planted in the sea, it is first tied on a special seaweed rope. After the seaweed is tied, it will be taken to the sea to be tied to a large rope or foundation using a connecting rope, then tied a buoy from styrofoam or plastic bottles so that the seaweed does not float on the surface and does not sink when the seaweed is large. The next stage is the process of harvesting seaweed, that the harvest time of seaweed ranges from 40 days to 2 months, because if more than 2 months then the seaweed will be damaged. After the seaweed is dry, the seaweed is put into large sacks which are then compacted until the sacks are filled. The next stage is sold directly to local collectors in Tihi-Tihi Village.

### Characteristics of Respondents

The characteristics of respondents according to employment status can be divided into four types including seaweed cultivators, community leaders, seaweed collectors, and representatives of the Bontang City Fisheries Service. The age of respondents is dominated by the 36-40 years category, for the education level is dominated by the SMA category with a total of 3 people with a percentage of 37.5%, and for religion all respondents are Muslim.

### Study of SWOT Analysis (Strengths, Weakness, Opportunities, and Threats) on Seaweed Cultivation Businesses

This SWOT (Strengths, Weakness, Opportunities, and Threats) analysis study was conducted by identifying internal and external factors in the seaweed aquaculture business development strategy in Tihi-Tihi village.

Table 3. Strength Analysis

No.	Strength	Weight	Rating	Score
1	Strategic location	0.1449	3	0.4346
2	Availability of seaweed cultivation area and potential	0.1402	3	0.4381
3	Availability of sufficient labor	0.1402	3	0.4731
4	Use of cheap and simple technology	0.1495	3	0.4486
Total Score				1.7944

Table 4. Weakness Analysis

No.	Weakness	Weight	Rating	Score
1	Limited capital	0.1215	4	0.4860
2	Limited cultivation area	0.1215	3	0.3645
3	Production results are not maximized	0.0935	4	0.3738
4	Very few good quality seeds	0.0888	4	0.3551
Total Score				1.5794

Table 5. Opportunities Analysis

No.	Opportunities	Weight	Rating	Score
1	High demand	0.4663	3	0.4663
2	Export market potential	0.3886	3	0.3886
3	High seaweed price	0.1399	4	0.5596
4	Existence of supporting institutions	0.1088	4	0.4352
Total Score				1.8497

Table 6. Threat Analysis

No.	Threats	Weight	Rating	Score
1	Impact of waste from the company	0.0984	4	0.3938
2	Natural factors	0.1244	2	0.2487
3	Price instability	0.1192	3	0.3575
4	Competitors from other regions	0.1244	3	0.3731
Total Score				1.3731

The factors obtained from the analysis include:

#### 1. Internal Factors

Internal factors are strengths (Strengths) and weaknesses (Weakness) as follows:

- a. Strengths are strategic location, availability of seaweed cultivation area and potential, availability of sufficient labor, and use of cheap and simple technology.
- b. Weaknesses are limited capital, limited cultivation area, less than optimal production, and very few good quality seeds.

#### 2. External Factors

External factors are opportunities (Opportunities) and threats (threats) as follows:

- a. Opportunities are high demand, export market potential, high seaweed prices, and the existence of supporting institutions.
- b. Threats are the impact of waste from the company, natural factors, price instability, competitors from other regions.

After knowing the combination strategy above, continued by calculating the SWOT Test (Strengths, Weakness, Opportunities, and Threats) then obtained internal factors Strength (Strengths) with a value of (1.7944), Weakness (Weakness) with a value of (1.5794), external factors Opportunities with a value of (1.8497), and Threats (Threats) with a value of (1.3731).

Table 7. SWOT Matrix Test Results

Internal Factors and External Factors		Strength	Weakness
		1,7944	1,5794
Opportunities	1,8497	3,6441	3.4292
Threats	1,3731	3.1674	2.9525

**SWOT Analysis Study (Strength, Weakness, Opportunities, and Threats) Using Quadrants**

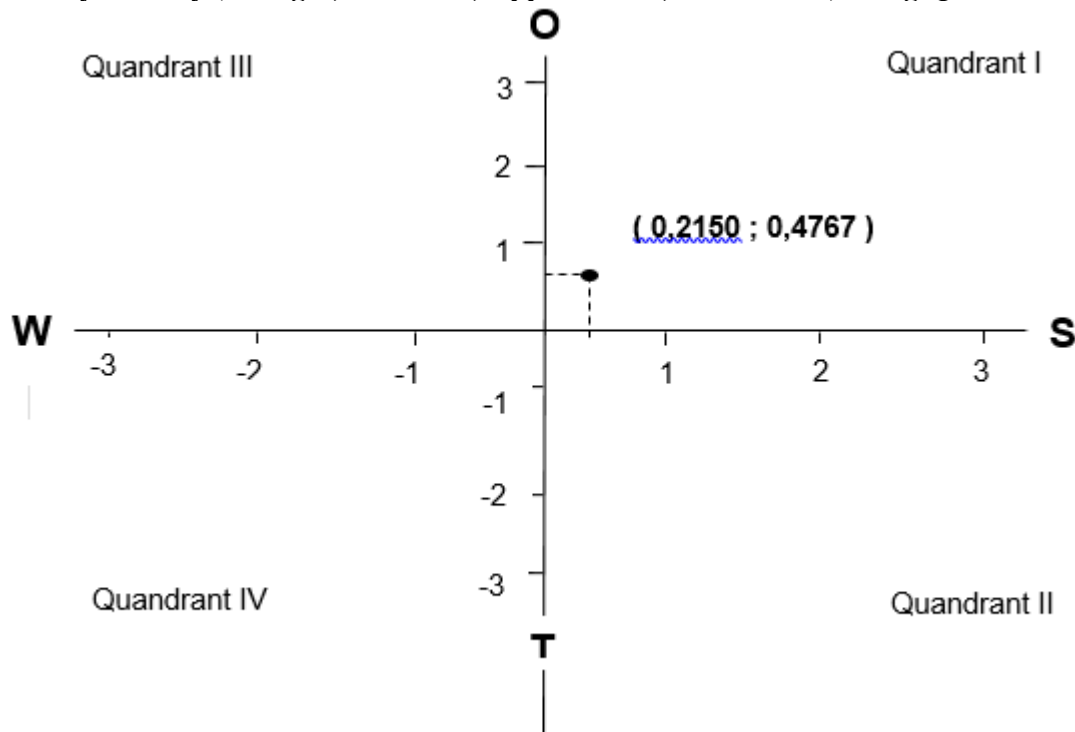


Figure 1. SWOT Strategy Position Matrix Analysis Study

Strategies that can be used by seaweed farmers in Tihi-Tihi Village based on the matrix results in Quadrant I, namely:

1. Increase the production of seaweed cultivation
2. Expanding cooperative relationships with buyers who will take the results of seaweed cultivation.

**Kajian Uji *Quantitative Strategi Planning Matrix* (QSPM)**

Table 8. Strategy priority

Num		Strategy	Priority
1	S-O 2	Expanding cooperative relationships with buyers who will take seaweed products	8.0000
2	S-O 1	Increase the production of seaweed cultivation	7.7513
3	S-T 1	Increase the productivity of seaweed cultivation	7.7513
4	W-O 1	Procurement of activities from local counseling related to seaweed cultivation	7.5959
5	W-O 2	Cooperate with the Bontang City Fisheries Office to obtain proper facilities and infrastructure	7.3658
6	W-T 2	Optimizing production with seeds that are still not good enough	7.3627
7	W-T 1	Improve the quality of seaweed cultivation production	7.2694
8	S-T 2	There is a need to determine the price of seaweed from the government.	6.9969

Then a priority strategy formulation was taken from S-O 2 (Strenghts-Opportunities) with a value of (8.0000) and S-O 1 (Strenghts-Opportunities) with a value of (7.7513) because this value is very large compared to other strategies. So what causes respondents to choose weights and priorities is that strategic factors are considered to play an important role in seaweed cultivation in Tihi-Tihi Village.

So this condition illustrates that the strategies carried out by seaweed farmers in the development of seaweed cultivation businesses are:

1. Expanding cooperative relationships with buyers who will take the results of seaweed cultivation.
2. Increase the production of seaweed cultivation

**CONCLUSION**

1. The results of the SWOT analysis study (Strenghts, Weakness, Opportunities, and Threats) took a priority strategy formulation of the S-O strategy (Strenghts-Opportunities) of (3.6441) because this value is greater than other strategies. This strategic factor is considered very influential on the activities of the seaweed cultivation in Tihi-Tihi village. This condition provides the following description:
  - a. Increase seaweed production.
  - b. Expanding cooperative relationships with buyers who will take seaweed production.
2. The results of the study (Quntitative Strategic Planning Matrix / QSPM) selected a prioritized strategy formulation from the S-O 1 (Strenghts-Opportunities) strategy with a value of (7.7513) and S-O 2 (Strenghts-Opportunities) with a value of (8.0000) which means the following:
  - a. Expanding cooperative relationships with companies that will buy seaweed production.
  - b. Increase seaweed production.
3. The results of the SWOT analysis study (Strenghts, Weakness, Opportunities, and Threats) using quadrants, the strategy can be concluded that the results are S-O (Strenghts-Opportunities) which is in

quadrant I. The strategy that can be used by seaweed farmers in Tihi-Tihi Village based on the results of the matrix. Strategies that can be used by seaweed farmers in Tihi-Tihi Village based on the matrix results in quadrant I, namely:

- a. Increase seaweed production.
- b. Expanding cooperative relationships with buyers who will take seaweed production.

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