SOCIO-ECONOMIC STUDY OF SEAWEED HILARIZATION CASE STUDY IN LONTAR VILLAGE, TIRTAYASA DISTRICT, SERANG DISTRICT

ABSTRACT

The amount of seaweed production in Lontar Village is decreasing every year so it is necessary to carry out an analysis to increase the amount of seaweed processing production in Lontar Village. The analysis used is a SWOT analysis for the direction of development of the seaweed processing business. The results of the IFAS and EFAS analysis of internal and external factors contain 5 factors. This research was conducted at the seaweed processing business in Lontar Village, Tirtayasa District, Serang Regency, carried out for 3 months, namely from October-December 2023. The research method used in the research was the case study method. The case study method examines a case in detail, the subject in individual, group, institutional and organizational case studies. The sampling technique uses a purposive sampling technique so that the data held can be more representative. The results of prospective analysis using 1 year data consisting of 5 harvest cycles show that the processing of processed seaweed products in Lontar Village is classified as poor, such as negative profits for processing seaweed derivative products, B/C Ratio value of less than 1, value production and total revenues are below the Break Even Point value, and the Payback Period value is more than 1. A suitable strategy to be implemented using the W-T (Defensive) strategy consists of optimizing the formation of a sustainable seaweed processing industry, developing a semi-finished seaweed processing industry (AR, SRC , and RC) gradually in seaweed production centers, developing the scale of ready-to-consume seaweed processing business from micro scale to industrial scale.

Keywords : Prospective analysis, proscessing, seaweed, strategy

1. INTRODUCTION

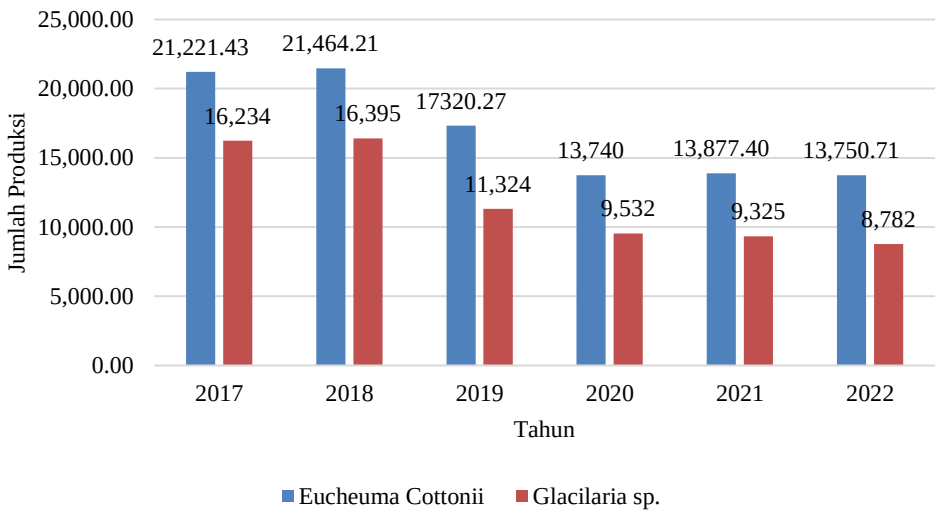
Blue economy-based development provides opportunities for countries that have coastal, marine and fisheries resources to manage and develop programs that can support economic resilience, prosperity and quality, as well as equitable economic growth. Seaweed is one of the main raw materials in Indonesia's blue economy development plan, which is part of Indonesia's RPJMN (National Medium Term Development Plan) for 2020 to 2024. Indonesia as an archipelagic country has a seaweed cultivation area of 12.2 million hectares and is estimated to produce 12.33 million tons of seaweed in 2024 (Arenawati and Titi Setiawati 2019).

Cultivated Fisheries Village is an area based on superior commodities and/or local commodities by synergizing various potentials to encourage the development of competitive and sustainable seaweed processing businesses, preserving fish resources, and driven by local communities so as to guarantee continuous production and scheduled. The considerations and objectives for developing this Processing Fisheries Village are to strengthen economic resilience, quality and equitable growth in order to improve maritime, fisheries and marine management through increasing production, productivity, quality standardization and added value of marine and fisheries products; as well as to increase fish processing production, fish processing income and welfare, and local community participation. The Cultivation Fisheries Village in Lontar Village, Tirtayasa District, Banten is a program that aims to optimize improving the welfare of the cultivating community.

One of the conditions is that seaweed is widely used as a raw material for the production of its derivatives which are used as processed human food and pharmaceutical raw materials (Chen & Duan 2000), which is a hydrocolloid which is used as a substance. Hydrocolloids are used as a mixture of gelling agents and thickeners in the food and beverage, textile and pharmaceutical industries. Hydrocolloid products from seaweed include carrageenan, agar and alginate (Herawati 2018). As demand for seaweed increases to meet domestic and international needs, aquaculture is the best way to maintain the supply of carbon-based natural resources (Ask and Azanza 2002). Seaweed is a source of income for coastal communities and a source of foreign exchange for the country. Apart from that, seaweed is a commodity that may be useful for helping the growth of small and medium scale businesses (SMEs). Downstream processing of seaweed involves a series of processes from harvest to product. Most processed seaweed products can be used in food, drinks and medicine. These include gelatin, dodol, seaweed crackers, seaweed sticks, cosmetics, alginate, and chewing gum. Seaweed is a very important industrial component (Eriyusnita 2014).

Seaweed farmers in Lontar Village initially processed seaweed, especially Eucheuma Cottonii seaweed individually, but by seeing the success of other farmers in managing and developing seaweed processing, this attracted the attention of other farmers to support the development seaweed processing. Seaweed farmers and fishermen living along the coast are increasingly trying to increase seaweed production. Therefore, the development of seaweed processing in Lontar Village began rapidly approximately 12 years ago, but currently the development of seaweed has decreased greatly, so they tend not to carry out post-harvest processing as an effort to increase the added value of seaweed. With several problems such as limited human resources, capital, lack of knowledge on how to market processed seaweed products and the absence of support for marketing places for seaweed. This has caused some seaweed farmers to temporarily not continue development in seaweed processing (Yuli 2016).

fig .1 Total Seaweed Production in Lontar Village



The amount of seaweed processing production in Lontar Village decreases every year, experiencing problems in raising business funds which has an impact on the product procurement process. According to Adam et al (2017). A weak capital structure is a characteristic of small and medium businesses. This is the background for conducting this research. In this research, an analysis will be carried out on the internal and external factors of the seaweed processing business in Lontar Village and formulation of development directions so that this seaweed processing business can be developed so that seaweed production can increase every year and processors can live prosperously in a sustainable manner.

2. MATERIAL AND METHODS

The time and place of the research was carried out from November 2023 to February 2024 in Lontar Village, Serang Regency, Banten. Data analysis uses quantitative descriptive analysis methods. Quantitative methods explain research using statistical data resulting from concrete analysis (Ridwan et al. 2021). Quantitative research uses numerical data that is processed to show the current state of variables as they are (Sari et al., 2021). Analysis is needed when formulating development direction to ensure that the development direction strategy is in accordance with the items to be built. SWOT matrix analysis Strengths, Weaknesses, Opportunities, and Treatment (Chrismastianto, 2017). is used to create a structured development direction. Additionally, IFAS, EFAS, IFE, and EFE Analysis is performed. IFE analysis evaluates internal factors through calculating weights and ratings to determine the X axis, while EFE analysis evaluates external factors which include opportunities and threats (Ratnawati, 2020).

2.1 SAMPLING TECHNIQUE

The sampling technique uses purposive sampling technique. Purposive sampling is a technique for determining research samples with certain considerations with the aim of making the data more representative. The characteristics of the respondents selected were owners and workers of seaweed processing businesses. The number of respondents processing

seaweed was 33 people and 3 people were taken as samples. The aim of taking respondents was to find out how the community markets seaweed products.

2.2 Types and Techniques of Data Collection

The type of data used in this research was obtained from primary data and secondary data. Primary data is a source of data obtained by researchers directly (Sugiyono 2019). The primary data source in this research was obtained through interviews and filling out questionnaires from seaweed processing in Lontar Village. Secondary data is data that is not obtained directly by researchers, this data is obtained from books, previous research and data from related parties (Sugiyono 2019). Secondary data sources in this research were obtained from previous research journals, books and data from the Lontar Village government

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2.3 DATA COLLECTION TECHNIQUES

The data required in this research goes through four stages, namely observation, interviews, documentation and literature study.

1) Observation, the observation method is collecting data that is directly observed from the location of the research location in which to get an idea of how the events or conditions of the place to be studied are like.
2) Interviews are a data collection technique by conducting questions and answers with respondents to obtain in-depth information, using questionnaire tools. Questionnaire question types are divided into 2, namely open and closed. Open questions are questions that are answered in the form of a description. Closed questions are questions that are answered briefly in the form of multiple choices (Sugiyono 2017).
3) Documentation, the documentation method is a way to collect data obtained on notes or a camera to document the results of research activities.
4) Literature study is a theoretical study of previous research in the form of books or journals regarding related research. This data collection technique does not involve going directly into the field with respondents, but rather looking for literature study sources to read, record and analyze for research purposes.

2.4 DATA ANALYSIS

The data analysis method used is a quantitative descriptive analysis method. Descriptive analysis is a method for describing data systematically, factually and accurately. Quantitative methods are a scientific approach to viewing a reality that can be classified, concrete, observable and measurable with causal relationships between variables. Quantitative research data is in the form of numbers and processed statistically. Quantitative methods aim to present the current state of variables in the form they are (Sugiyono 2018).

3. RESULTS AND DISCUSSION

Based on the results of the IFAS and Efas analysis, the following internal and external factors influence the seaweed processing business in Lontar Village in table 1.

Table 1 : Internal and external factors influence the seaweed processing business in Lontar Village

Internal Factors	Eksternal Factors

Strength : a. Public interest in seaweed processing business b. Labor is easy to obtain from family and community c. Seaweed processing equipment is simple and cheap d. Availability of a large processing area e. Raw materials are easy to get	Opportunity : a. Great opportunity for development b. Development of promotional media c. High demand d. Great opportunity to build a seaweed processing industry e. Hold a cooking clas
Weakness : 1. Lack of knowledge and skills in the seaweed processing business 2. Still using tradisional tools for drying using sunlight 3. There is no land for marketing 4. Product promotion has not been effective 5. Production of several products is still low	threat : 1. Threat of climate 2. There is no training from extension workers 3. Increase in raw material prices 4. Changing consumer interests 5. No assistance from the government

3.1 IFE and EFE Matrix Analysis

Based on the calculation results, the following are the IFE and EFE values in Table 2.

Table 2 : IFE and EFE Matrix Analysis

Matrix IFE				
No	Strength	Weight	Ratings	Score
1	Public interest in seaweed processing business	0,09	3,94	0,34
2	Labor is easy to obtain from family and community	0,06	4,00	0,25
3	Seaweed processing equipment is simple and cheap	0,08	3,94	0,32
4	Availability of a large processing area	0,07	3,97	0,27
5	Raw materials are easy to get	0,09	3,94	0,37
	Total Score			1,56

No	Weakness	Weight	Ratings	Score
1	Lack of knowledge and skills in seaweed processing business	0,11	2,90	0,33
2	Still using tradisional tools for drying using sunlight	0,13	3,71	0,46

3	There is no land for marketing	0,12	3,61	0,43
4	Product promotion has not been effective	0,13	3,55	0,44
5	Production of several products is still low	0,13	3,68	0,46
	Total Score			2,12

Matrix EFE				
No	Opportunity	Weight	Ratings	Score
1	Great opportunity to develop	0,12	3,90	0,45
2	Development of promotional media	0,10	3,90	0,41
3	High demand	0,09	3,58	0,31
4	Great opportunity to build a seaweed	0,10	3,65	0,38
5	Hold a cooking class	0,05	3,42	0,17
	Total Score			1,72
No	Threat	Weight	Ratings	Score
1	Threat of climate	0,12	3,77	0,44
2	There is no training from instructors	0,10	2,61	0,26
3	Increase in raw material prices	0,11	3,10	0,34
4	Changing consumer interests	0,10	2,87	0,30
5	No help from the government	0,11	3,26	0,36
	Total Score			1,70

3.2 Grand Strategy Matrik Analysis

Based on the results of the grand strategy matrix analysis (Figure 2), the X axis has no results and the Y axis (-0.56) and (-0.02) are in quadrant IV, the appropriate strategy to apply to the seaweed processing business in Lontar Village is W-T (Defensive) strategy. The W-T (Defensive) strategy is a strategy that avoids threats and also reduces internal weaknesses Weaknesses and Threats. The following is a W-T strategy that can be applied to seaweed processing businesses in Lontar Village.

In the seaweed processing business in Lontar Village, the selected strategy was determined through a grand strategy matrix analysis consisting of four: progressive S-O (Strengths-Opportunities) strategy, diversified S-T (Strengths-Threats) strategy, and changing W-O (Weaknesses-Opportunities) strategy. defensive W-T (Weaknesses-Threats) direction and strategy. Grand strategy analysis (Ratnawati, 2020). The results of IFE calculations to

determine the x-axis and EFE to determine the Y-axis were recalculated using the formula used in this analysis (Sarmin et al., 2021). The score values for each factor, as well as the calculations used to determine the X and Y axes, can be found here:

1. Total score for strength (S) : 1,56
2. Total score for weakness (W) : 2,12
3. Total score for opportunity (O) : 1.72
4. Total score for threat (T) : 1,70

The total score for each component is entered into the SWOT analysis formula, to determine the X axis and Y axis. The following is the calculation

$$\underline{X ; Y =} \frac{S-W}{2} ; \frac{O-T}{2}$$

$$X ; Y = \frac{1.56-2.12}{2} ; \frac{1.72-1.70}{2}$$

$$X ; Y = -0,56 ; -0,02$$

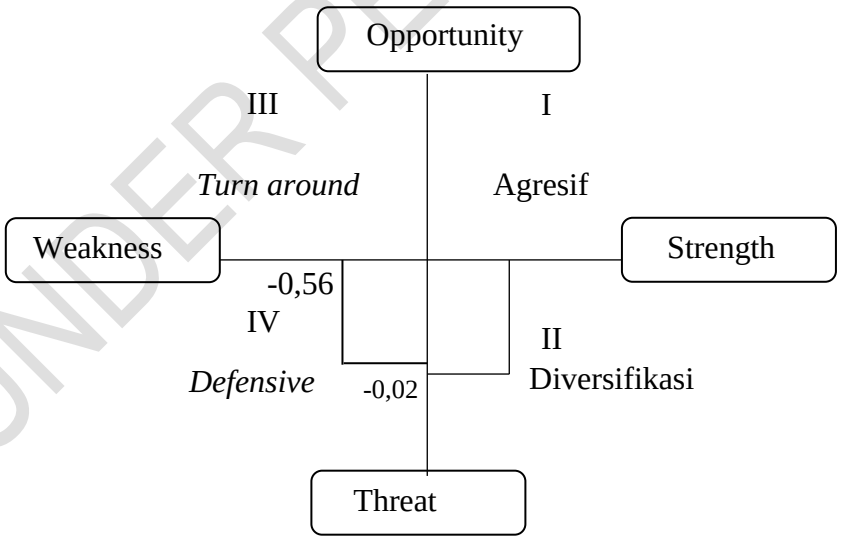

Figure 2. Results of Strategy Matrix Analysis

3.3 IFAS and EFAS Analysis

1) Streangth

Strengths of seaweed processing business activities in Lontar Village include community interest in the seaweed processing business, community interest in the seaweed processing business, labor that is easy to obtain from families and the community, simple and cheap processing technology, availability of seaweed processing areas. Spacious and easy to obtain raw materials. Seaweed processing is a type of processing with fast turnover because the harvest time for drying is only 2-3 days, so many people are interested in processing seaweed. The seaweed processing workers in Lontar Village come from the community or family, usually women do the seaweed work. Simple seaweed processing technology consisting of tarpaulin, bamboo and waring at a low price. The seaweed processing area in Lontar Village is 200 m, this area is on the coast of Lontar Beach.

2) Weaknesses (Weaknesses)

Weeknesses (Weaknesses) of the seaweed processing business activities in Lontar Village are the lack of knowledge and skills in the seaweed processing business, still using traditional tools for drying using sunlight, no land for marketing, ineffective product promotion and production of some products. low. Most seaweed processors lack knowledge and skills in seaweed processing businesses, especially in terms of promoting seaweed products. Seaweed processing in Lontar Village often encounters problems in marketing and selling processed products, then drying which is influenced by bad weather. Lontar Village is very influential if there is a seaweed processing industry which can increase the selling value of seaweed.

3) Opportunities

Opportunities (Opportunities) from seaweed processing activities in Lontar Village are big opportunities for development, development of promotional media, high demand, big opportunities to build a seaweed processing industry, holding cooking classes. The market potential for seaweed in Lontar Village is very wide, the results of the drying seaweed harvest have been distributed to almost all regions in Indonesia and have export potential. Lontar Village is a village that has a program from the government, namely "Cultivation Village" so that it can develop quickly. Local institutions support and assist seaweed cultivation activities, a form of support and assistance in the form of providing seaweed seeds and boats to the seaweed cultivation group in Lontar Village. The abundant results of seaweed cultivation can be developed in the processing sector to increase sales value. Seaweed cultivation and drying technology needs to be developed and is an opportunity in the future to increase production. Facilities and infrastructure for seaweed cultivation in the future will continue to be evaluated and improved to support seaweed cultivation activities.

a. Export market potential
b. Development of promotional media

4) Threats

Threats from seaweed processing activities in Lontar Village include the threat of global climate change, lack of training from extension workers, rising raw material prices, changing consumer interests and no assistance from the government. Climate change is a major threat to seaweed processors, bad weather causes seaweed processors to take longer to dry the drying process, which affects income. Seaweed processing in Lontar Village has not received training from extension workers on how to process seaweed properly and in accordance with SNI. The increase in raw material prices in Lontar Village occurs due to weather and environmental conditions as well as marine pollution which can reduce seaweed production. Selling prices are high from January to March because the weather is good for seaweed cultivation activities so the harvest is good and this month is approaching the month of Ramadan so demand for seaweed is high. Changing consumer interests also pose a threat to seaweed processors in Lontar Village. Most of the people in Lontar Village are currently working overseas, such as in Malaysia, Korea and Saudi Arabia, because they get high

salaries. This is a threat because it can make the young generation of Lontar Village think that they prefer to become foreign workers rather than seaweed processors because there is no assistance from the government.

3.4 IFE and EFE Matrix Analysis

Based on the results of the IFE and EFE analysis, it shows that there are 5 factors for each internal component (strengths, weaknesses) and external components (opportunities and threats). Each factor has a different value. Strengths include community interest in large seaweed processing businesses with a score of 0.34, labor easily available from families and communities with a score of 0.25, simple and easy seaweed processing technology with a score of 0.32, availability of large processing areas with a score of 0.27 and raw materials are easy to obtain with a score of 0.37. The total score value for strength is 1.56. Weaknesses include lack of knowledge and skills in the seaweed processing business with a score of 0.33, still using traditional tools for drying using sunlight with a score of 0.46, no land for marketing with a score of 0.43, ineffective product promotion with a score of 0.44 and there is no seaweed processing industry with a score of 0.46. The total score for weakness is 2.12. This IFE value is used to determine the X axis in the grand strategy matrix.

EFE includes opportunities and threats each consisting of 5 factors. Opportunities include very large opportunities for development with a score of 0.45, development of promotional media with a score of 0.41, high demand with a score of 0.31, great opportunities to build a seaweed processing industry with a score of 0.38 and holding cooking class with a score of 0.17. The total value of the opportunity score is 1.72. Threats include the threat of climate change with a score of 0.44, no training from extension workers with a score of 0.26, rising prices of raw materials with a score of 0.34, changes in consumer interest with a score of 0.30 and no assistance from government with a score of 0.36. The total threat score value is 1.70. This EFE value is used to determine the Y axis in the grand strategy matrix.

3.5 Grand Strategy Matrix Analysis

Based on the results of the grand strategy matrix analysis (Figure 2 the). The W-T (Non Progressive) strategy is a strategy that avoids threats and also reduces internal weaknesses Weaknesses and Threats. The following is a W-T strategy that can be applied to seaweed processing businesses in Lontar Village.

1. Optimize the processing area and amount of seaweed production

Seaweed processing (*Eucheuma cottonii*) has a drying processing area of 350 m. The seaweed drying processing area in Lontar Village is only used for 200 m. The seaweed processing area in Lontar Village needs to be utilized optimally. The utilization area for seaweed processing can be used at 200 m to optimize the drying processing area and increase the amount of seaweed production. In this strategy, it is necessary to increase seaweed drying processing areas by identifying locations that have suitable environmental conditions for seaweed processing. Providing information regarding weather forecasts and environmental modeling to anticipate extreme weather changes to take appropriate precautions to protect seaweed from damage so as to increase the amount of seaweed production in Lontar Village.

2. HACCP training and certification for processing

HACCP training and certification is carried out so that seaweed products in Lontar Village can be exported. Seaweed exports require HACCP certification. In implementing this program, it is necessary to form an expert team consisting of marine scientists, food experts and HACCP practitioners to design a training curriculum that suits the needs of seaweed processing. The curriculum should include a basic understanding of HACCP principles,

recognition of potential hazards and risks in seaweed processing, as well as effective control practices. Provide training materials in a format that is easy to understand and relevant to the context of seaweed processing, such as group discussion learning methods, providing guidebooks, case studies, and direct practical demonstrations so that they are easy to understand and can illustrate the application of HACCP principles in seaweed processing. Include practical training sessions in the field where participants can directly apply HACCP principles in seaweed processing settings. After training, conduct a knowledge and skills test to assess participants' understanding and ability to apply HACCP principles. After successfully completing the training and passing the exam, provide certification to participants as proof of success in implementing HACCP principles in seaweed processing. Ensure that the certification is recognized by the relevant authorities and accredited by a trusted institution. Conduct ongoing monitoring and evaluation of the effectiveness of the HACCP training program. Implementing feedback to participants to help them improve their understanding and skills and monitoring program performance to adjust and improve training programs. Collaborate with educational institutions, government and the private sector to expand access and improve the quality of training programs.

4. CONCLUSION

Based on the research results, the following are the conclusions of this research

1) Based on the results of the IFAS and EFAS analysis, internal and external factors have 5 factors. Strength factors include community interest in the seaweed processing business, labor is easily available from family and community, seaweed processing equipment is simple and cheap, large processing areas are available, raw materials are easy to obtain. Weakness factors include lack of knowledge and skills in the seaweed processing business, still using traditional tools for drying using sunlight, no land for marketing, ineffective product promotion, production of some products is still low
2) Based on the results of the SWOT analysis, it shows that the The W-T (Non Progressive) strategy is a strategy that avoids threats and also reduces internal weaknesses Weaknesses and Threats. The following is a W-T strategy that can be applied to seaweed processing businesses in Lontar Village.

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