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The Competitiveness of Seaweed Cultivation in Sawu Island as Remote Island in East Nusa Tenggara Indonesia

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Abstract:
Research on the Competitiveness of Seaweed Cultivation business in Sawu island as a remote island in East Nusa Tenggara, aims to determine the competitiveness of seaweed cultivation and to determine the effect of changes in external factors on the competitiveness of the seaweed cultivation business. Field data collection was carried out in December 2020 - January 2021. The results showed that the seaweed cultivation business in the research location had a competitive advantage and comparative advantage, with PCR (competitive) value of 0.70 and DRC (comparative) value of 0.79. The results of the sensitivity analysis showed that the competitiveness of the seaweed cultivation business at the study site did not change due to changes in external factors. Even when production decreased by 25%, seaweed cultivation business still had competitiveness, which was illustrated by the PCR value and DRC value are respectively 0.80 and 0.84, but when production decreased to 50%, seaweed cultivation business did not have competitiveness, which was indicated by the PCR value is 1.20 and the DRC value is 1.26.

Keywords: *Competitiveness, seaweed cultivation business*

1. Introduction

According to the Ministry of Maritime Affairs and Fisheries of Indonesia, two-thirds of the total area of Indonesia is an ocean area with around 17,504 islands and has a coastline of about 95,181 km^2. Sawu Island is one of the islands in East Nusa Tenggara Province. In Indonesia, Sawu Island is included in the category of remote island. Based on the classification of Schmid and Ferguson (1992), all of region in Sawu island is a semi-arid area that characterized by a dry season that are about 9 months in a year or rainy seasons are only about 3 months a year. Based on these extreme climatic conditions, farming activities can only be carried out during one season in a year, that is during the rainy season. Therefore, problems with limited income and limited food availability are happens more often in rural households.

Generally, people in coastal areas of remote islands such as on the island of Sawu have jobs in the field of fisheries and marine. One of them is aquaculture which includes fishing, seaweed cultivation, and smallholder salt industry (Wiendiyati, Nur, and Sinu, 2020)

The waters around Sawu Island are still very clean and far from polluting materials so it has the potential to produce very good quality of seaweed. In recent years, seaweed production in this district has grown rapidly and has become a source of income for the community, especially those living on the coast. Thus, Seaweed is one of the superior marine products in Sawu Regency. Until the end of 2019, there were at least 4,154 seaweed farmers in Sawu Regency with a production of 76,231 tons of wet seaweed or 9,531 tons of dry seaweed (Statistical Central Bureau of Sawu Regency, 2020). Of course, the results are not optimal yet and the potential can still be increased because Sawu district is an area surrounded by oceans so that it can produce even greater benefits.

Seaweed is a treatable commodity so its price is strongly influenced by international trade prices. The international prices of seaweed are volatile because they are influenced by several factors such as exchange rates and the development of seaweed production by other producing countries. Meanwhile, seaweed cultivation itself has its challenges. The most serious challenge is the presence of pests and diseases that cause a decrease in production and crop failure. Based on this problem, the problem of competitiveness of seaweed cultivation is an important thing to study.

This study aims to analyze the competitiveness of seaweed cultivation on Sawu Island, as well as to analyze changes in external factors such as changes in exchange rates, changes in inter-island transport costs and changes in seaweed production on the competitiveness of seaweed on Sawu Island.

2. Materials and Methods

2.1. Study Site

This research was conducted on one of the remote islands in the province of East Nusa Tenggara, namely on the island of Sawu. From a geographical aspect, Sawu island is categorized as isolated islands because during the high sea wave season there is no mobility to and from the island. Flights to this island only three times a week using small aircraft with a capacity of less than 15 passengers. Passenger and commercial ships dock on this island once in 3 weeks. Besides that, the selected area is a critical area characterized by dry land conditions and dry climate. The location of the study area is shown in Figure 1.

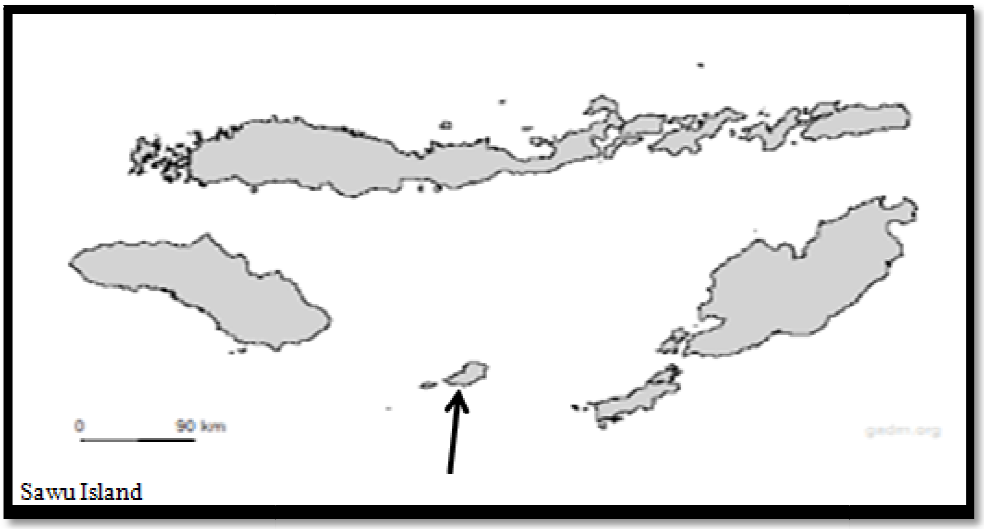

Figure 1: The Map of East Nusa Tenggara Province Showing Sawu Island as Research Location

2.2. Data Collection

The field research has been conducted during December 2020 - January 2021. the focus is on zoning activities for the development of seaweed cultivation in the coastal village areas at the research location. The location of the sample village is Lobo Hede village, in the Hawu Mihara sub-district. This village was chosen purposively because all households in the village cultivate seaweed.

Respondents in this study were seaweed farmers in Lobo Hede village. Respondents were selected by simple random sampling as much as 30% of the population. There are 136 families of seaweed cultivating farmers in the village so that the number of sample farmers in this study was 40 farmers.

2.3. Analysis Method

The analytical method used to measure the competitiveness of the seaweed cultivation system is the *Policy Analysis Matrix* (PAM). PAM measures profits both privately and socially. This method shows the actual revenues, costs, and profits and compares them with these values if the commodities and resources were calculated at international price levels or domestic opportunity costs. (Monke and Pearson, 1995; Pearson, Gotsch, and Bahri, 2005).

Research on the impact of the current policy is very important to restructure seaweed farming systems. PAM analysis measures the competitiveness of aquaculture systems and the impact of a policy on the system. The main limitation of PAM is that the results of the analysis are for the base year, so if the main parameters (such as world prices, exchange rates, interest rates, etc.) change, the results will change as well. However, the PAM method can accommodate these changes. For this reason, a sensitivity analysis (a simulation) should be used to measure the impact of these changes.

	Revenue	Inputs		Profit
		Treatable Inputs	Domestic Factors	
Privat	A	B	C	D[1]
Social	E	F	G	H[2]
Divergency	I[3]	J[4]	K[5]	L[6]
From the Matrix table, values 0r ratios can be obtained such as:				
[1] Private advantage: D = A - B - C [2] Social advantage:H =E - F - G [3] Output transfer : I = A - E [4] Input Transfer : J = B - F [5] Factor Transfer : K = C - G [6] Net Transfer : L = D - H		Nominal Protection Coefficient on Output (NPCO) = A/E Nominal Protection Coefficient on input (NPCI) = B/ F Effective Protection Coefficient (EPC) = (A-B)/(E-F) Profitability Coefficient (PC) = D/H Subsidy Ratio to Producers (SRP) = L/ E Private Cost Ratio (PCR) = C/ (A - B) Domestik Resource Cost (DRC) = G/ (E-F) Effective Protection Coefficient (EPC) =(A-B)/ (E-F)		

Table 1: Policy Analysis Matrix. (PAM)

The ratio values from the PAM table above give meaning about the position of the seaweed cultivation business system in the research area and what policies are needed to improve that business system.

3. Result Research and Discussion

3. 1. The Overview of Research Sites

Sawu Island is located between 10o25'7.12' – 10o49'45.83' South Latitude and between 121o16'10.78 – 122o0'30.26' East Longitude with the boundaries of North, East and West bordering the Sawu sea. and the southern part is bordered by the Indian Ocean. The average height of the area in Sabu Rawu Island is 0-100 meters above sea level. Generally, the land surface is hilly with an average slope of 45o. In addition, there are also limestone mountains that stretch along the island.

Most of the flora in Sabu Island consists of Savana or vast grasslands, palm trees, pine trees, and mangrove forests. While the fauna consists of large mammals such as buffalo, cows, horses; small mammals such as goats, pigs and sheep, and poultry consisting of chickens and ducks.

The area of Sawu Island is 460.47 km2, while the area of Hawu Mehara District which is the research location is 65.35 Km2 or 40.21 percent of the total area of Sawu Island. Climatic conditions on Sawu Island are generally characterized by a long dry season and low rainfall.

3.2. Seaweed Cultivation Business by Respondents

The sea is a place used by farmers to cultivate seaweed where the sea is a place that belongs to the community so that it cannot be taken or owned by each person.Anyone can take or cultivate marine products with certain limitations in accordance with applicable local rules. The average area of seaweed cultivation by respondents in the research location is 3.75 acre with a range between 3 acre - 6 acre, depending on the ability of capital and family labor owned by each respondent.

Seaweed cultivation from planting to harvesting takes about 45 days. Then, post-harvest handling takes 3-5 days. In one year, there are 4-5 times of planting period and in the rainy season and high sea waves, farmers do not cultivate seaweed. The observation results from production aspect show that the average seaweed production by respondent farmers is 1,810 kg of dried seaweed per acre with a selling price of 20,000 per kg.

In detail, the use of inputs from seaweed cultivation and the results are as shown in the following input output table.

Inputs/ Output	Items	Volume
Tradeable Input	Seeds (Kg/acre)	642,5
Domestic Factors	Large Rope (Meters)	23,6
	Small Rope (Meters)	94,4
	Iron stake/ peg (units)	6
	Iron Cross/ Bars (Units)	2
	Labor (*Working Day People*)	
	Site Preparation (WDP)	1,91
	Planting (WDP)	28,55
	Maintenance (WDP)	2,16
	Harvest (WDP)	2,15
	Post-Harvest (WDP)	5,72
	Marketing (WDP)	0,14
	Working Capital (IDR)	17.614.500
	Land (acre)	0
Output	Production (Kg/acre)	1.810

Table 2: Input-Output of Seaweed Cultivation Per Acre in Lobo Hede Village, Sawu Island
Source: Primary Data

Table 2 shows that seaweed cultivation using tradeable inputs includes wet seeds with a need of 642.5 kg/acre and domestic factors consisting of 6 units of iron stakes taken from iron with a length of 2 m which are then cut to a size of 40-50 cm. Some farmers use alternative stakes from wood so as to reduce costs. Then, 2 bars of iron with a length of 8 m were used as a barrier between seaweed owners. The iron can be used for ± 3 years. The rope consists of a small rope and a large rope, the large rope as the main rope that connects the stakes while the small rope is used to bind the seeds. The technical life of the rope is 1-2 years.

3.3. Private Prices and Social Prices of Inputs-Output in Seaweed Cultivation

Private prices are prices prevailing at the farm level in the research site. While the social price is the price that should actually occur or the price without any policy. The social price is often referred to as the shadow price or border price. In this study, social prices are approximated by international prices. Only the treatable input-output is calculated for its social value. Meanwhile, the social price for domestic inputs is calculated the same as the private price.

In the seaweed cultivation business, almost all of them use domestic inputs to produce treatable products. Thus, in this study, the calculation of social price tracking is only for seaweed products. Because seaweed products from Sawu Island are exported abroad, we will first look for free on board (f.o.b) prices at the port of Surabaya and then look for parity prices up to the farmer level. Some notes and assumptions used to calculate the price of the seaweed parity are:

- f.o.b price or export price in the form of ATC (Alkali Treated Cottonii) Chips of $ 7,128,207 US/ton.
- The exchange rate at the time of the study was IDR 14,080 per US$.
- Private interest rate is 23% per year, and social interest rate is 30% per year.
- ATC Chips processing fee is IDR 4,360 per kg.
- Depreciation during shipping process is 10%.
- The conversion from dried seaweed to ATC Chps is 100: 31.5.

Based on these notes and assumptions, the price of seaweed parity is as shown in the following table:

Items	Price
f.o.b Surabaya (US$/ Ton)	7.128,207
Exchange Rate (IDR/ US$)	14,080
f.o.bPrice atSurabaya Port(IDR/ Kg)	100,365.15
Transportation Cost(IDR/ Kg)	
- Sawu Port -Surabaya Port(IDR/ Kg)	11,500
- Surabaya Port - Wholesalers (IDR/ Kg)	5,00
Ship Loading Fee(IDR /Kg)	87,81
Cost of moving goods (IDR /Kg)	1,000
Warehouse rental fee (IDR / Kg)	675
ATC Chips processing cost (IDR / Kg)	4,360
Distribution cast from/ to farmer (IDR / Kg)	500
Balance	82,242.34
Depreciation10%	8,224.23
Price after depreciation (IDR / Kg)	74,018.11
Price after conversion to dried seaweed (IDR/Kg)	23,315.70

Table 3: The Seaweed Parity Price
Source: Primary Data Analysis

According to Table 3, the social price of dried seaweed at the farmer level is IDR 23,315.70 per Kg. This means that the price received by farmers is lower than the price it should be. Therefore, the local government should think of some efforts or policies so that the price of seaweed received by farmers rises close to the social price.

Inputs/ Output	Items	Private Price	Social Price
Tradeable Input	Seeds (IDR/ kG)	8,000	13,683
Domestic Factors	Large Rope (IDR/ meter)	300,000	300,000
	Small Rope (IDR/meter)	20,000	20,000
	Iron stake/ peg (IDR/ Unit)	150,000	150,000
	Iron Cross/ Bars (IDR/ Unit)	287,500	287,500
	Labor (*Working Day People*)		
	Site Preparation (IDR/ WDP)	50,000	50,000
	Planting(IDR/ WDP	50,000	50,000
	Maintenance(IDR/ WDP	50,000	50,000
	Harvest(IDR/ WDP	50,000	50,000
	Post-Harvest(IDR/ WDP	50,000	50,000
	Marketing(IDR/ WDP	50,000	50,000
	Working Capital (%)	23	30
	Land(IDR/ acre)	0	0
Output	Production (IDR / Kg)	20,000	23,315.70

Table 4: Private and Social Prices for Inputs and Outputs on Seaweed Cultivation in the Research Village
Source: Primary Data

The table above shows that the social price of domestic inputs is the same as the private price. while the social price of the output is taken from its parity price. while the price of seeds is the private and social price of wet seaweed. Then, from the input-output data as well as private and social prices for input-output in seaweed cultivation, the private and social budgets for seaweed cultivation are obtained as shown in Table 5. According to the table, although the social revenue of seaweed cultivation is greater than the private revenue, the total social costs are also large, especially for the treatable input of seeds and the social interest rate for working capital. So that in the end the total private profit is greater than the social benefit.

From the results of the private budget analysis illustrates that the seaweed cultivation business provides an average net profit of IDR 35,228,119 with a range of IDR 28,182,495 to IDR 56,364,990 per 2 months. The profit value is very good compared to the profits of the cultivation of food crops such as rice, corn, and beans. But, if compared to the people's salt industry business with a geomembrane pattern which is also carried out on this island, it appears that the people's salt business has much better profits. According to Wiendiyati, Nur, and Sinu (2021), every two months the people's salt business gives a net profit of around IDR 56,470,344 to IDR 83,104,633. However, this smallholder salt industry business with a geomembrane pattern requires a large investment capital of around IDR 997 million. Whereas, the seaweed business does not require large capital because marine resources are available in sufficient quantities without having to hire, and the labor used for the business is family labor, so there are actually no real costs incurred for labor, so it is quite prospective if the commodity is developed more widely.

Inputs/ Output	**Items**	**Private Budget**	**Social Budget**
Tradeable Input	Seeds (IDR/ kG)	5,140,000	8,791,327.5
Domestic Factors	Large Rope (IDR/ meter)	7,080,000	7,080,000
	Small Rope (IDR/meter)	1,888,000	1,888,000
	Iron stake/ peg (IDR/ Unit)	900,000	900,000
	Iron Cross/ Bars (IDR/ Unit)	287,500	287,500
	Labor (*Working Day People*)		
	Site Preparation (IDR/ WDP)	95,500	95,500
	Planting (IDR/ WDP	1,427,500	1,427,500
	Maintenance (IDR/ WDP	108,000	108,000
	Harvest (IDR/ WDP	107,500	107,500
	Post-Harvest (IDR/ WDP	286,000	286,000
	Marketing (IDR/ WDP	50,000	7,000
	Working Capital (%)	4,051,335	5,284,350
	Land (IDR/ acre)	0	0
Output	Total Revenue (IDR / acre)	36,200,000	42.201.425
	Total Costs (IDR / acre)	26,805,835	35,342,505
	Total Profit (IDR / acre)	9,394,165	6,598.920

Table 5: Private Budget and Social Budget for Seaweed Cultivation at the Research Site
Source: Primary Data Analysis

To assess the policy aspect of the seaweed cultivation business, we first enter the values in the private and social budgets into the Policy Analysis Matrix (PAM) Table. According to the Table, the divergence in the PAM Table causes the actual price to differ from the efficiency price. Divergences arise for one of two reasons: market failure or policy distortions. Two distinct divergences are output transfer and input transfer. PAM analysis must examine carefully in determining whether or not there is a market failure that affects the output market. Studies on agricultural systems in developing countries that have been conducted by Dunmore (1985); Monke and Pearson (1995); Pearson, Gotsch, and Bahri (2004) conclude that significant market failures affecting output markets are rare. Monopolies found in various places are generally created by government policies.

The nominal protection coefficient of output (NPCO) ratio from Table above is 0.8578 (less than 1), indicating that farmers receive an output price lower than the price they should receive. This happens because farmers sell their output in the form of raw materials so there is depreciation, conversion, transport and other costs. According to Rapsomanikis, 2015, lack of access to roads and transport constrains households' access to markets and services. This fact is also experienced in the research area, where as a remote island, road infrastructure and commodity transport must be obstacles that lead to low output prices at the farm level. On the other hand, farmers relying on exports are also influenced by competition from farmers in other countries; sharp increases in exports can drive down world prices. (Kahan, David, 2013).

	Revenue	Input Treatable	Domestic Factors				Net Profit
			Material	Labor	Capital	Total	
Private	36.200.000	5,140,000	10,443,000	2.031.500	4.051,335	21.665.835	9,934,165
Social	42.201.425	8,791,328	10,443,000	2.031.500	5.284.350	26.550.178	6,859,921
Divergency	-6.001.425	-3.651.328	0,0	0,0	1.233.015	-4.884.343	2,534.244
From the matrix table above, ratios can be obtained such as: NPCO = 0.8578; NPCI = 0.5847;PC = 1.37; SRP = 0.06; PCR = 0.6975; DRC = 0.7947; EPC = 0.9297							

Table 6: Policy Analysis Matrix of Seaweed Cultivation Business System
Source: Table 1, Table 5

The divergence in treatable inputs causes the cost of private treatable inputs to differ from the social costs as presented in the PAM table above. Because the value of negative divergence causes an implicit subsidy or there is a transfer of resources into the system. The ratio to measure tradable input transfer is he nominal protection coefficient of input (NPCI) ratio is 0.5847 (less than 1), indicating that farmers pay for treatable inputs at a much lower price than the proper price. This happens because the treatable inputs used by farmers (seeds) are only obtained from their villages, so the price is much cheaper and there are no transport costs. In line with the research results of Silvia, Ardente, and Mathieux (2016) who said that the choice of using inputs with prices that are 15% cheaper than the comparable inputs can increase the efficiency of the total cost by almost 40%.

In addition, PAM analysis must carefully examine whether or not there is a market failure (monopoly or externality) that affects the tradable input market. Studies conducted in several developing countries by Pearson, Gotsch, and Bahri (2004); Anderson, Marthin, and Mensbrugghe. (2006 show that significant market failures affecting tradable inputs are rare. As with tradable output, most monopolies occur because of government policies, not cartels formed by the private sector. According to Haji (2014), two sources of divergence that affect tradable input prices are price policies, trade barriers or taxes/subsidies, and exchange rate disequilibrium.

The PAM Table also shows that net transfer value is IDR 2,534,244; meaning, the seaweed cultivation business system in Sawu Island is profitable without any policy. While the profitability coefficient (PC) is 1.37 indicates that a net transfer of IDR 2,534,245 causes private profits to be almost 1.37 times larger than it would be if there was no policy transfer. So, the question is, why do policy makers in Sawu Regency still have to implement policies that help the seaweed cultivation system even without policy assistance the system has been very profitable? As stated by Anderson (2006) that his research provides stronger evidence that agricultural protection and subsidies not just abroad but also at home are ineffective in helping small farmhouse holds escape from poverty, it would make it easier to persuade governments and development agencies that reducing agricultural price distortions in developing countries leads to pro-poor growth. Such an outcome would be all the more likely if reducing distortions were to be accompanied by complementary domestic reforms such as reducing public underinvestment in rural infrastructure and institutions.

Meanwhile, Subsidy Ratio to Producers (SRP) value is0.06. This means that such a large net transfer will occur with an output export tariff of 6%, if there are no other divergences. So, to maintain a net transfer rate of IDR 2,534,245, the NPCO can be increased from 0.8578 to 0.9179. These results indicate that almost all subsidies for seaweed producers are sourced from their export tariff policies, and very small are sourced from input subsidies and implicit subsidies for capital costs.

The PAM table above also informs that the PCR ratio is 0.6975 and the DRC ratio is 0.7947, indicates that the seaweed cultivation system in the study area has a competitive advantage and comparative advantage, because both values are less than 1, mean, to produce one unit of profit, the cost used in the cultivation system is less than one unit, similarly, to produce one unit of foreign exchange, the domestic resources used are less than one unit.

Although the calculation of competitiveness and comparative advantage is very simple, in fact there are many factors that influence it such as production, prices, exchange rates, interest rates, markets, policies of producing and consumer countries. In short, competitiveness is a complex issue, as well as comparative advantage. This opinion was confirmed by Dunmore (1985), Paarlberg, et al (1985), Vasilii, Diao, and Du (2020), who state that the effects of monetary and fiscal policies on the agricultural sector are numerous, especially, the differing effects on competitiveness and comparative advantage.

The Effective Protection Coefficient (EPC) in the seaweed cultivation business system is 0.9297. This value indicates that there is no significant government protection for the business system.

3.4. Sensitivity Analysis

This analysis was made to see how the influence of changes in external factors on the competitiveness of seaweed cultivation business. For this purpose, several scenarios of changes that may occur in the future are made. Some of the simulation changes made include:

- There is a change in the value of the rupiah strengthening so that the exchange rate of the rupiah against the US dollar is IDR 13,000/US$; on the other hand, there was a change in the exchange rate against the US dollar, weakening to IDR.14,500/US$.
- There is an increase in inter-island transportation costs by 25%.
- There was a decrease in seaweed production by 25% and 50%.

The results of the sensitivity analysis are as presented in the Table 7, as a comparison, the base value of is also shown. According to the sensitivity analysis table, the strengthening or weakening of the rupiah exchange rate against the

US dollar as well as the increase of inter-island transportation costs, did not change the competitiveness of the seaweed cultivation business. Meanwhile, a decrease in production of 25% does reduce competitiveness, but the PCR ratio is still smaller than 1 so that business competitiveness is still there, but if the production declines to 50%, the business has absolutely no competitiveness and does not even have a comparative advantage.

Based on these facts, it can be said that the competitiveness of seaweed cultivation is not sensitive to changes of external factors unless there is a significant decrease of production. Therefore, maintaining production stability needs to be a concern for seaweed farmers.

When there is a strengthening of the value of the Rupiah, the private output price will be closer to the world price, although it must be accompanied by the increasing value of domestic resources that must be used to obtain one unit of foreign exchange. The strengthening of the Rupiah exchange rate also causes private profits to be three times greater (3.23) than social benefits due to the added value at the domestic price level is greater than the international price level (world prices). However, the weakening of the Rupiah from IDR.14,080/US$ to IDR.14,500/US$ had implications for the decline in private profits as illustrated by the PC ratio from 1.37 to 1.12.

Comparative advantage decreases when the Rupiah exchange rate strengthens, inter-island transport costs increase and when production declines. Then, from all the EPC values, it shows that the protection policy will be significantly ineffective. Only when the rupiah exchange rate strengthens does the policy on input prices and output prices allow the seaweed system which is described as having a private price added value of 5% greater than the added value without policy transfer which is measured as world prices. Likewise, policies are needed when production falls by 50%.

Ratios	Base Value	Exchange Rate IDR 13,000/US$	Exchange Rate IDR 14,500/US$	Inter-island Transport Cost, Increase by 25%	Seaweed production Decrease by 25%	Seaweed Production Decrease by 50 %
NPCO	0.86	0,95	0,83	0,89	0,86	0,86
NPCI	0.58	0,58	0,58	0,58	0,58	0,58
PCR	0.70	0,60	0,60	0,60	0,80	1,20
DRC	0.79	0,69	0,61	0,65	0,84	1,26
PC	1.37	3,23	1,12	1,74	-0,09	0,61
EPC	0.93	1,05	0,89	0,97	0,96	1,05
SRP	0.06	0,74	0,11	0,46	0,46	0,63

Table 7: Sensitivity Analysis Result Due to Changes in External Factors
Source: Primary Data Analysis

4. Conclusion

Seaweed cultivation is one of the economic activities that is quite prospective to be developed in remote islands because of the support of abundant domestic resources and producing treatable products. This seaweed cultivation business is quite cheap so it has good competitiveness and comparative advantage, although the private price received by seaweed farmers is lower than the price it should be (world market price).

The influence of changes in external factors such as the exchange rate of the rupiah against the US dollar, as well as the increase in inter-island transportation costs did not significantly change the competitiveness and comparative advantage of the business. Likewise, a 25% decrease in production does not cause the business to lose their competitiveness or comparative advantage. But, when production drops to 50%, this business no longer has competitiveness and comparative advantage.

To increase the private selling price of seaweed, the local government needs to make a policy to build the seaweed processing industry into Cheap ATC or at least the processing industry into intermediate products. This policy in addition to increase the selling value of seaweed, can also be a source of employment as well as an effort to increase Regional Original Income.

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