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SENSITIVITY EVALUATION OF KERAPU SUNU FISH CULTIVATION (*PLECTROPOMUS LEOPARDUS*) IN KERAMBA CAGES IN THE DISTRICT OF EAST BINTAN, BINTAN REGENCY

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ABSTRACT

This research was conducted in July to August 2014 in the District of East Bintan, Bintan regency. The aim of this research is to analyze the sensitivity of the business to changes in selling prices, the value of production volume, rising costs and the contribution of business GNP Bintan regency. The method used was a survey method. The results of the sensitivity analysis showed that fish cultivation should be developed for each investment due to obtain results in accordance with the eligibility criteria for investment. The value of the contribution was less effort to contribute to revenue (GNP) of Bintan Regency because this business still has been running for 3 years, so it is not optimal in practice.

Keywords: Sensitivity, Kerapu Sunu, Keramba Cage

INTRODUCTION

Farming in Keramba cage (KJA) is one form of management and utilization of marine resources environment (Affan, 2012). One type of commercial marine fish are now widely cultivated in Keramba cages and an export commodity is Kerapu Sunu Fish (*Plectropomus leopardus*). Utilization of water resources in an optimal one of which can be seen through the evaluation of financial performance through the analysis because it can be known whether the benefits outweigh the costs incurred (Munawir, 2002).

Bintan regency is one of the East Coast of Sumatra region that is rich in fishery resources. The area of fish farming in Bintan regency is quite large, it is considering the area of Bintan regency is 98.51% of marine waters, has a very long coastline reaching 966.54 km and its waters have many straits which are suitable for the cultivation of marine development (DKP Bintan , 2014). By utilizing the position of Bintan regency as coastal areas, the cultivation of marine fisheries becomes leading sectors of Bintan regency besides catching sectors.

Interviewed with Kerapu farmers in the district of East Bintan indicate that they still facing obstacles, lack of access to the source of capital as well as the uncertainty factor changes. These changes are based on events that occur frequently, namely changes in selling prices, rising production costs and changes in production volume. All of these will certainly affect the acceptance of the profits. In the other hand, the business carried on also demanded at least no contribution to revenue (GNP) Bintan Regency.

Based on the problems that occur in Kerapu fish farmers in the district of East Bintan, research needs to be conducted to analyze the sensitivity of this business and the cause of the problems in managing Kerapu fish cultivation in the district of East Bintan, so that it can be given an alternative solution.

RESEARCH METHODOLOGY

The research was conducted in July and August 2014 in the East Bintan District, Bintan Regency, Riau Islands Province. The method used in this peneitian is a survey method. The sample in this research that the four farmers who had 10 bags of cages in one business unit and two farmers who had 20 bags of cage / in a single business unit.

In the pattern of Kerapu fish business, financing was used three scenarios of sensitivity (Mariyah, 2010), namely:

1. Scenario 1: revenue down, variable costs fixed. In this scenario the revenues decreased while the cost remains variable. The decline in income can occur due to declining selling prices or reduced production volume.

2. Scenario 2: the variable costs rise, fixed income. At this scenario, the cost increase while revenues are considered fixed. The increase in variable costs was possible because the price of the means of production such as seed, feed, pharmaceuticals increased.

3. Scenario 3: variable costs rise and incomes down. This scenario is a combination of scenarios 1 and 2. In this scenario, it is considered income decreased and at the same time variable cost increase.

To determine the contribution of coral trout grouper fish cultivation in the district of East Bintan to local revenue (GNP) analysis contribution ratio by the following formula (Arditia, 2008):

Contribution ratio = (realization of local income) / (revenue) x 100%

Table 1. Classification Criteria Contributions

No.	Percentage	Criterion
1	0,0% -10%	Sangat kurang
2	10,10% -20%	Less
3	20,10% -30%	Medium?
4	30,10% -40%	Fairly Good
5	40,10% -50%	Good
6	> 50%	Very Good

Source: R & D Team Depdagri-UGM in Arditia (2008)

RESULTS AND DISCUSSION

Sensitivity Analysis

The sensitivity analysis in this study was done to see the extent of coral trout grouper fish cultivation in the event of changes in the flow of benefits and costs i.e. price changes, rising costs and changes in the value of production volume (Taufik, Muani and Radian, 2013). Scenario sensitivity in the pattern of coral trout grouper culture, namely:

Scenario I. Revenue Down, Fixed Variable Costs

At this scenario, revenues decreased while the cost remains variable. The decline in income can occur due to declining selling prices or reduced production volume. The decline in income can be seen from the volume of production and the selling price of fish is assumed to decrease by 2%. Results of sensitivity analysis are presented in Table 2.

Table 2. Sensitivity Analysis Scenario 1 Revenue Down (volume of production fell by 2%), Variable Cost Fixed Kerapu Fish

Cultivation In Keramba cages In District East Bintan.

Cultivator	Component Business	Analysis	Criteria	Description
Category I	NPV (df 12%)	15,266,071	>0	eligible
	B/C Ratio	1.09	>1	eligible
	IRR	12%	>12%	eligible
Category II	NPV (df 12%)	16,005,357	>0	eligible
	B/C Ratio	1.06	>1	eligible
	IRR	12%	>12%	eligible

Source: Data Processed, 2014

Table 2 shows the changes that occurred resulted in average value of NPV for cultivator category I and II were Rp. 15,266,071 and Rp. 16,005,357, respectively. It means that investment planting will give a profit of Rp. 15,266,071 and Rp. 16,005,357 in each of these cultivation. Kerapu fish cultivation in each category deserve to be developed because the NPV value greater than 0 (Zulkifli, 2006).

The B/C ratio on Cultivators category I and II resulted in the value of 1:09 and 1:06, meaning for every current value of spending Rp 1 will provide acceptance Rp. 1.09 and 1.06.IRR obtained in each cultivator is the same, namely 12%, meaning that this effort will provide the average income per year of invested capital of 12% The value B / CR and IRR obtained meet the criteria feasibility of a value B / CR> 1, IRR> general interest rate of 12% (Mariyah, 2010).

Scenario I. Revenues Decrease (sale price down 2%), Variable Cost Fixed

At this scenario, revenues decreased due to declining selling prices, while the cost remains variable. Results of sensitivity analysis are presented in Table 3.

Table 3. Sensitivity Analysis Scenario 1 Revenue Decrease (sale price down 2%), Variable Cost Fixed Cultivation of Kerapu Sunu In the Keramba in the district of East Bintan

Cultivator	Component Business	Analysis	Criteria	Description
Category I	NPV (df 12%)	15,289,286	>0	eligible
	B/C Ratio	1.07	>1	eligible
	IRR	13%	>12%	eligible
Category II	NPV (df 12%)	16,049,464	>0	eligible
	B/C Ratio	1.07	>1	eligible
	IRR	13%	>12%	eligible

Table 3 shows the changes that occurred resulted in the average value of NPV of cultivator category I and II were Rp. 15,289,286 and Rp. 16,049,464, meaning that investment planting will give a profit of Rp. 15,289,286 and Rp. 16,049,464 in each of these cultivators. Kerapu fish cultivation in each category deserve to be developed because the NPV value is greater than 0 (Zulkifli, 2006).

The B/C ratio on Cultivators of category I and II were in the value of 1:07 means for every current value of spending Rp 1 will provide revenue of Rp. 1.07. IRR obtained in each cultivator was the same, namely 13%, meaning that this effort will provide the average income per year of the capital invested by 13% The value B/CR and IRR obtained meet the eligibility criteria of business value /CR> 1, IRR> general interest rate of 12% (Mariyah, 2010).

Scenario II. Variable Costs Rise, Fixed Income

This scenario, the costs increase while revenues are considered fixed. Results of sensitivity analysis are presented in Table 4.

Table 4 shows the changes that occurred resulted in the average value of NPV for each cultivator category I and II is Rp. 15,754,286 and Rp. 16,603,929, meaning that investment planting will give a profit of Rp. 15,754,286 and Rp. 16,603,929 in each of these cultivators. Kerapu fish cultivation in each category deserves to be developed because the NPV value was greater than 0 (Zulkifli, 2006).

Table 4. Sensitivity Analysis Scenario 2 Up 2% of Variable Costs, Fixed Income, Business Growth of Kerapu Sunu in the Keramba cages in the District of East Bintan

Cultivators	Component Business	Analysis	Criteria	Description
Category I	NPV (df 12%)	15,754,286	>0	eligible
	B/C Ratio	1.06	>1	eligible
	IRR	13%	>12%	eligible
Category II	NPV (df 12%)	16,603,929	>0	eligible
	B/C Ratio	1.07	>1	eligible
	IRR	13%	>12%	eligible

Source: Data Processed, 2014

The ratio of B/C on Cultivators category I and II were in the value of 1:06 and 1:07, means that for every current value of spending Rp 1 will provide acceptance Rp. 1.06 and 1:07. IRR obtained in each cultivator was the same, namely 13%. It means that this effort will provide the average income per year of invested capital of 13%. The ratio of B/CR and IRR obtained meet the eligibility criteria of business value B/CR> 1, IRR > general interest rate of 12% (Mariyah, 2010).

Scenario III. Revenue Variable Costs Rise and Decline (production volume decreased by 2%)

This scenario is a combination of scenarios 1 and 2. In this scenario, it is considered income decreased and at the same time variable cost increase. Results of sensitivity analysis are presented in Table 5.

Cultivator	Component Business	Analysis	Criteria	Description
	NPV (df 12%)	10,786,429	>0	eligible

Category I	B/C Ratio	1.04	>1	eligible
	IRR	12%	>12%	eligible
	NPV (df 12%)	11,540,893	>0	eligible
Category II	B/C Ratio	1.05	>1	eligible
	IRR	13%	>12%	eligible

2. Ratio of Contributions Cultivation Kerapu Sunu In Keramba cages in the district of East Bintan

Contributions cultivation Kerapu fish in Keramba cages in the district of East Bintan is a donation or role given by grouper fish cultivation on revenue Bintan regency. Regional Income is income received by the local government for all the potential that exists in the region (Arditia, 2008). Bintan regency value of GDP can be seen in Table 6.

Each year, the amount of contribution ratio Kerapu fish cultivation with the assumption that the average income of the year around the farmers in the district of East Bintan is 1,123,460,000, - the contribution ratio of Kerapu fish cultivation to local revenues in 2010 amounted to 3.61%, in 2011 3:41% and in 2012 for 3:20%.

Table 6. Actual Gross Regional Domestic Product (GDP) of Bintan Regency at Current Market Prices in 2000 by Business Sector Year 2010-2012 (Billion Rupiah)

No	Description of Business	2010	2011	2012
1	Agriculture, Vetenerinar, Forestry & Marine	175.37	189.48	210.54
2	Mining & Quarrying	325.84	346.03	362.22
3	Industrial Process	1,634.6	1,723.30	1,831,34
4	Electricity, Gas & Water Supply	8.38	8.96	9.41
5	Infrastructure	96.90	103.59	112.46
6	Tradings, Hotels & Restaurants	615.25	660.76	700.49
7	Transportation & Communication	112.771	119.42	126.72
8	Finance, Rent & Business Services	48.65	51.85	54.29
9	Services	93.47	99.60	103.33
	Total	3,110.79	3,302.99	3,501.79

Based on the classification criteria of the contribution that the cultivation of Kerapu fish in Keramba cages in the district of East Bintan much less contribute to revenue (Arditia, 2008). Furthermore, this business has been only 3 years run and have not been optimal in practice. So, the local government through the Kerapu Sunu fish farmers in Keramba cages in the district of East Bintan sell their crops to local collectors, existing marketing of Kerapu relevant agencies should make greater efforts to increase the contribution of Kerapu fish cultivation in Keramba cages in order better to increase programs in promoting the cultivation towards more advanced (Taufik, Muani and Radian, 2013).

farmers in the district of East Bintan can be seen in Figure 1.

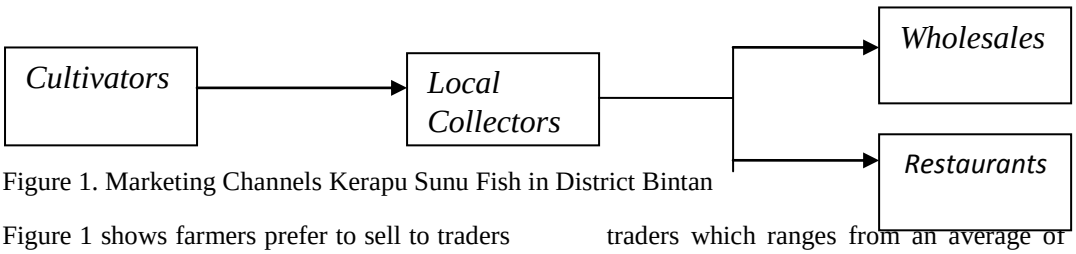

Figure 1. Marketing Channels Kerapu Sunu Fish in District Bintan

Figure 1 shows farmers prefer to sell to traders at Sei Six because it is more practical, do not need to pay transportation, and because alasanbelum has a network marketing grouper fish both locally and abroad. Sales of fish to local collectors to be alive (Anomaly). The purchase price at relatively the same level of traders which ranges from an average of Rp. 100,000, to Rp. 130,000 ,. Kerapu fish which have been purchased by a local collector resold to wholesalers in Batam and Singapore or directly to restaurants in Tanjungpinang and surrounding areas. Payments to farmers made in cash at harvest.

CONCLUSION

The sensitivity analysis produces kerapu fish cultivation feasible to be developed for each investment due to obtain the results of the above eligibility criteria for investment is obtained an average NPV value greater than zero (20,684,822), the value of B / C> 1 (1: 04) and the average value of IRR > of the bank rate of 12% (12%), when the selling price decreased 2% (17,400 rupiah /harvest) from an average of Rp. 130,000, -, costs increased on average by 2% (257 million /harvest) from (252 million /harvest) or average production volume decreased by 2% (2.117 kg /harvest) from (2,160 kg /harvest). Kerapu fish farming in Keramba cages in District Mantang much less contribute to revenue (3.4%) which is below the criterion of contribution (0.0% - 10%). Besides, this business cultivation has been only 3 years, so it is not optimal in practice.

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