Risk Analysis Income of Fish Business at Ranau Lake of South Sumatera Indonesia

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Abstract. This study aimed to analyse the risk income of fish business in Ranau Lake of South Sumatera Indonesia. The location is determined by purposive on the banks of Ranau Lake, South OKU, South Sumatera Province, Indonesia. The method of this research is case study method, and simple random sampling as the sample method, with take 62 samples of 81 total population. The result showed that the income from this business is Rp 148.459.460 a year. Risk analysis showed that this business will not face risk significantly, which is indicated by the coefficient of variation of 0.0892004791 with a lower limit value of the income is Rp 121.974.150.081.

1 Introduction

The lake is a very important natural resource for human life. Based on the type of goods and ownership, the lake is a common good that is shared by the community. Because of its general nature then everyone is open to use it freely according to his needs. This situation will lead to lake resources will tend to be utilized in accordance with the needs of the surrounding community, regardless of its sustainability. In turn there will be an inevitable condition that is a conflict of interest, both in utilization and authority in the management, so that it can threaten the sustainability of these resources [4].

Indonesia has more than 700 lakes with a total area of more than 5,000 km or about 0.25% of the land area of Indonesia [2], Lake Ranau is one of the lakes in the Province of South Sumatra, Indonesia precisely in South OKU Regency which has great potential for the development of fisheries business, one of them in the form of floating net cages (KJA). Fish business in KJA is the most productive method of aquaculture today. This is due to several factors of excess in the application of KJA techniques such as high stocking of seeds, availability of water quantity, not requires soil treatment, control of predatory disturbances is relatively easy, harvesting is easier, and can be moved to another location [6].

Fish business using floating net cages pattern (KJA's pattern) in South Sumatra is centered in South Ogan Komering Ulu (OKU) Regency. South OKU Regency has several lakes including Ranau Lake which is used by the community for freshwater fish business KJA Pattern and very strategic for the development of fish business Mujair KJA pattern because it is located along Lake Ranau. Statistical data of Department of Fisheries and Marine of South Sumatra. 2016, indicates the production of freshwater fish of South Ogan Komering Ulu Regency is as follows in Table 1.

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Table 1. Freshwater fish production in Ranau Lake, 2016

No	District	Production (Ton)	Values (Rp.000)
1	Mekakau Ilir	14.776	14.776
2	Banding Agung	79.104	79.104
3	BPR.RanauTengah	27.520	27.520
4	Warkuk Ranau Selatan	93.580	93.580
5	Buay Pemaca	22.800	22.800
6	Simpang	8.390	8.390
7	Buana Pemaca	14.500	14.500
8	Muaradua	59.112	59.112
9	Buay Rawan	20.310	20.310
10	Buay Sandang Aji	27.430	27.430
11	Tiga Dihaji	23.000	23.000
12	Buay Runjung	23.380	23.380
13	Runjung Agung	21.640	21.640
14	Kisam Tinggi	18.280	18.280
15	Muaradua Kisam	13.230	13.230
16	Kisam Ilir	28.260	28.260
17	Pulau Beringin	32.366	32.366
18	Sindang Danau	27.800	27.800
19	Sungai Are	10.440	10.440
	Amount	565.918	565.918

Table 1 shows that the freshwater fish production in South OKU Regency, South Sumatera Province reaches 565.918 ton a year. Fish business with KJA pattern itself is located along Lake Ranau precisely in Warkuk Ranau South District. This business has been in existence for 10 years as a result of the low price of coffee received by farmers at that time. The fish business using floating net cage pattern (KJA) along Lake Ranau requires a large business capital, but the benefits that will be in can also quite high. Harvest fish can be done 4 times in 1 year. However, many people who remain interested in the business of mujair fish with the pattern of floating net cages. On the other hand, fish business along the Ranau Lake has many risks, including production risk and the income risk itself. Based on this background, it is interesting to learn more about the risk analysis income of fish business in floating net cages at South OKU Regency, South Sumatera Indonesia.

2 Materials and Methods

This research has carried out in South OKU Regency, South Sumatera Indonesia as the center of fish business using floating net cages along the Ranau Lake. The research method use case study method and the samples were taken randomly, with simple random sampling method. The total population of fish business with floating net cages are 81 and taken 62 as the samples with the same size of KJA and same fish inside their KJA i.e Mujair Fish. The amount of income of this business can be calculated using the this following formula :

Pd = Pn - BT
Pn = Y x Hy
BT = BTp + BV

Where :
Pd = The income of fish business in floating net cage (Rp/yr)
Pn = Revenue (Rp/yr)
Y = Number of Fish Production (Rp/yr)
Hy = Selling Price of Fish (Rp/Kg/yr)
BT = Total Cost of Fish Business (Rp/yr)
BTp = Fixed Cost of Fish Business (Rp/yr)
BV = Variable Cost of Fish Business (Rp/ yr)

To analyse the risk of fish business using floating net cage pattern, can be calculated as follows:

$$E = \frac{\sum_{i=1}^{n} Ei}{n}$$
$$CV = \frac{V}{E}$$
$$V^2 = \frac{\sum_{i=1}^{n}(Ei - E)^2}{(n-1)}$$

$$V = \sqrt{V^2}$$

$$L = E - 2V$$

Information :
E = Average value of revenue (Rp)
Ei= Value of the i-th earnings (Rp)
n = Number of Samples
CV = Coefficient of Variation
V = Standard deviation
L = Lower limit of revenue(Rp)

Rule of decision (Kadarsan, 1995):
1. If CV> 0.5 then the value of L <0 = fish business opportunity to lose
2. If CV ≤ 0.5 then the value of L ≥ 0 = The business of fish avoid the loss

3 Results and Discussions

The cost of production is all costs that must be incurred in the business of fish consisting of fixed costs and variable costs. The variable cost of fish business is the cost of seeds, feed, medicines and labor. While fixed costs are included in fixed costs include bamboo, waring, wooden beams, ropes and nails. The composition of fixed costs on and variable costs of the fish business results in total cost, as can be presented in Table 2.

Table 2. Cost of fish business in Ranau Lake, 2016

Cost	Amount (Rp/yr)
1. Fixed cost Bamboo Waring Wooden beams Ropes Nails	66.500 270.000 339.000 33.800 26.280
Amount of fixed cost	735.580
2. Variable cost Seeds Feed Medicine Labor	2.599.000 25.440.000 45.960 2.620.000
Amount of variable cost	30.704.960
Amount of fish business cost	31.440.540

Production is the result obtained by fish farmers at harvest time. Each fish farmer expects that the fish business will benefit greatly, it is seen from how the farmers more improve the attention to the fish business. Prices of fish mujair at the time of the study average of Rp. 25.000/kg with an average production of 7196 kg a year. Acceptance obtained from the business is Rp. 179.900.000 a year. The details of production, price, and acceptance of fish business at South OKU Regency can presented in Table 3 below:

Table 3. Revenue of fish business in Ranau Lake, 2016

No	Item	Amount
1 2 3	Production (Kg/yr) Price (Rp/Kg) Revenue (Rp/yr)	7.196 25.000 179.900.000

Table 4 shows that the average production of the fish business at the time of study was 7196 kg a year or 7 tons a year, quite high as compared to the freshwater fish business in South Bengkulu Regency by [1] research is 5 ton a year. This indicates that the production of fish business around Lake Ranau is promising with the condition of Lake water is still very good for the development of fish business using floating net cages pattern. Furthermore, the amount of income received by fish business can be presented in Table 4 below:

Table 4. The income of fish business in Ranau Lake, 2016

No	Item	Amount
1	Revenue (Rp/yr)	179.900.000
2	Production cost (Rp/yr)	31.440.540
3	Income (Rp/yr)	148.459.460

The income of fish business is obtained from the reduction of revenue with total cost based on the result of the analysis of the fish business acceptance of Rp.179.900.000 a year and the production cost of Rp. 31.440.540 a year, then the income of Rp. 148.459.460 a year or Rp. 12.371.621 a month. Furthermore, the risk of fish business at Ranau Lake can be counted [5] and presented in Table 5 below :

Table 5. The risk of fish business income at Ranau Lake, 2016

No	Item	Amount
1	Average of income (Y)	148.459.460
2	Samples (n)	62
3	Standar Deviation (V)	13.242.654.95918
4	Coeficient of Variation (CV)	0,0892004791
5	Income limitation (L)	121.974.15008164

Table 5 shows that the fish business produces coefficient of variation less than 0.5 ($0.0892004791 \leq 0.5$) and L over ($121.974.150,08164 \geq 0$). This means that the business is likely to avoid losses. Revenue owned by fish farmers in the research location is quite high that is Rp.148.459.460 a year or Rp.12.371.621 a month. High enough income will affect the behavior of fish farmers in facing risks, where they can carry out various strategies in dealing with problems that during the business. With considerable income, some risks that fish farmers can avoid include weather conditions, disease attacks, high feed costs, and human resources. Compared with [1] research, The Revenue and Risk Analysis of Freshwater Fish Cultivation in South Bengkulu Regency. The results showed that the income of freshwater fish cultivation, especially mujair fish is Rp. 59,512,743.75 of planting season, and fall into high risk category, the cause of the high risk of freshwater fish culture is the risk of disease attack and the high cost of feed and the lack of government attention to the quality of the cultivation, resulting in a decrease in quality.

4 Conclussion

1. The average income of fish business in Ranau Lake of South OKU Regency, South Sumatera Indonesia is Rp.148.459.460 a year.
2. The risk level of fish business in Ranau Lake of South OKU Regency, South Sumatera Indonesia is protected from loss.

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