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Evaluation of Business Activities and Business Feasibility Policulture Fish Cultivation in Cirata Reservoir, West Java

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ABSTRACT

This study aims to analyze the business feasibility of polyculture fish farming business activities in the Cirata Reservoir. This research was conducted in August 2018 until July 2019. The method used in this research is purposive sampling method. The parameters used in this study are business profit, Benefit Cost Ratio (BCR), Break Even Point (BEP) per kg and price, Payback Period (PP) and cost of goods sold (COGS). Based on the results of the study showed that polyculture fish farming business activities benefit and can be said to be feasible to run because it meets the standard criteria with an average value of business profits obtained in these aquaculture business activities of Rp 37,463,888.89, BCR average obtained at 1.54, the BEP per kg obtained for carp is 840 kg at a price of Rp 23,333.33; tilapia fish at 700 kg at a price of Rp 23,333.33 and nilem fish at 954.54 kg at a price of Rp 52,500, the average PP obtained was 1.85 and the average HPP for production / kg was at Rp 8,488.3 whereas, the average HPP for production / pcs is Rp 2,122.07.

Keywords: business feasibility, profit, BCR, BEP, PP, COGS

Introduction

Cirata Reservoir is a located in the Citarum river flow, and is located between the Saguling Reservoir and Jatiluhur Reservoir with an area of around 6,200 ha. At present the number of KJA in the Cirata Reservoir is 68,874 KJA, while the maximum number of KJA that is in accordance with the original plan for the construction of the Cirata Reservoir is only 12,000 KJA. Many fish farmers in Cirata Reservoir use polyculture cultivation techniques, namely the maintenance of many types of fish that are kept in one land (Sukamto and Maryam 2005). There are many types of fish that can be cultivated in KJA including goldfish, nilem, tilapia, catfish, and pomfret. Some types of fish that cannot be cultivated one type in one net include pomfret and carp.

According Afrianto (1994) states that the polyculture cultivation system if implemented in accordance with the principles of fish farming can provide benefits for fish farmers, namely natural foods such as phytoplankton and zooplankton

available in ponds can be used effectively by fish so that no more food is wasted -sia, land use becomes more efficient because with the same area of land can be maintained more fish species, overall pond production will increase because the number of fish kept in one pond is more, the production of each type of fish will be higher when compared to yield monoculture maintenance, and the density in the polyculture system is the same or lower when compared to monoculture. This polyculture cultivation system has been widely applied, especially in the Cirata Reservoir.

Cultivation activities in the cages in the Cirata Reservoir are included in the intensive cage cultivation system. According to the 2014 BPWC, farmers cultivate about 50 tons of excess feed (pellets) around the bottom of the Cirata Reservoir. This causes the production of fish catches in the Cirata Reservoir from year to year has decreased. In 2009 production reached 1075.55 tons and in 2013 only 1001.87 tons. This is aimed at a decrease of 73.68 tons and in the last year 2012-2013 decreased 15.15 tons.

Method

The study was conducted in August 2018 - March 2019 at the Floating Net Cages Cirata Reservoir, West Java. The method used in this study is a survey method and the data taken in the form of primary data and secondary data. Primary data obtained from interviews and questionnaires with fish farmers that have been selected using purposive sampling, while secondary data are obtained from the Cirata Reservoir Management Agency (BPWC) and the Office of Marine Fisheries and Animal Husbandry District. Cianjur Types and sources of data can be seen in the following Table 1.

Table 1. Data Types and Sources

No.	Data Type	Data	Data Source
1.	Primary	Business performance	Interview
		Income	Interview
2.	Secondary	Land area	BPWC, Agency
		Cultivation area	BPWC, Agency
		Number of cultivators	BPWC, Agency

Primary and secondary data that have been obtained are then analyzed using descriptive methods. The collected data and information are evaluated using Business Profit Analysis, Benefit Cost Ratio (BCR) analysis, Break Even Point (BEP), Payback Period (PP) and Cost of Goods Sold (COGS).

Result and Discussion

General Description of The Research Area

Cirata Reservoir is located at an altitude of 221 meters above sea level, the maximum depth reaches 106 m and the maximum water volume reaches 2.165 million m3. The area of Cirata Reservoir is 7,111 Ha with inundation area of 6,200 Ha. Aquaculture activities in the Cirata Reservoir have grown rapidly since 1994, which was originally only carried out by the surrounding community, currently fish farming activities in the Cirata Reservoir have been dominated by migrant communities.

Floating Net Cages Cultivation Techniques

a. Stocking of goldfish, nilem and tilapia

The seeds that are stocked are seeds with a size of 5 cm which are purchased from the Tasikmalaya, Subang and Cianjur areas. When buying seeds, ensure that they are not exposed to diseases such as fungus or even viruses. Spreading the seeds is done in the morning or evening when the waters are not too hot.

b. Feeding

The feed given is artificial feed in the form of pellets. The feed used is pillar and Sprott brand feed. Feeding is done 3 times a day, but when the weather conditions are bad feeding is given as much as 5 times a day. Feeding is carried out in the morning between 08.00 - 10:00, during the day between 13:00 - 14:00 and in the afternoon between 16:00 - 18:00.

c. Harvest

Harvesting is usually done every 3-4 months. The tools used at the time of harvest are nets, anchors, iron, sewers and buckets. Harvesting is done by narrowing the space for fish in cage bags. This is done by wrongly closing one side of the bag with the other side.

Startup Capital

Capital based on its use can be divided into two types, which is investment capital and operational capital. Investment capital is capital that is issued since starting a business until the investment is ready to operate, while operational capital is capital that is issued to finance all expenses that cause a business can run.

The components which are the investment capital for polyculture fish farming business are land, guard house, and feed house. The capital spent to make KJA is ± Rp. 65,000,000 to Rp. 75,000,000.00 or even more. The operational capital needed to carry out a polyculture fish farming business includes seed, feed, labor costs, guard salaries, equipment depreciation costs, self-help contributions, and PBB payments which can be seen in Table 2.

Table 2. Operating Costs

Component and Sub Component	Unit	Volume	Price	Total Cost
Seed	Kg	200	Rp. 35,000	Rp. 7,000,000
Feed	Kg	3000	Rp. 8,135	Rp. 24,405,000
Guard Pay	-	2	Rp. 1,500,000	Rp. 3,000,000
Self-help Dues	-	-	-	-
PBB	-	-	Rp. 500,00	Rp. 500,000
Amount				Rp. 34,905,000

Marketing

The marketing channel that is traversed in the process of marketing fish in a polyculture is relatively short. Some of the harvests are sold to sub-agents, sold to traders (exchangers) and exchanged to feed mills according to the amount of the harvest to reduce costs that must be incurred because the selling price of feed is very

high and prices will continue to rise. The selling price of nilem fish from farmers is Rp. 18,000.00 - Rp. 22,000.00. For tilapia the selling price is Rp. 22,000.00 - Rp. 25,000.00 and for goldfish the selling price is not much different from the selling price of tilapia which is Rp. 22,000.00 – Rp. 25,000.00.

Water Quality

The results of water quality measurements according to Faizal (2016), which is temperature, dissolved oxygen (DO), and the degree of acidity (pH) in maintenance ponds are still within the feasibility range in accordance with predetermined standards can be seen in Table 3.

Table 3. Water Quality Maintenance Media During The Study

Parameter	Result	Standard	Source
Temperature	29,5 – 30,9 ^{o}C	25 – 30 ^{o}C	Sutisna and Sutarmanto 1995
DO	3 – 4,1 mg/l	3 – 6 mg/l	PP RI/82/2001
pH	6,2 – 7,3	6 – 9	PP RI/82/2001

Financial Analysis of KJA Cultivation

a. Business Profit Analysis

The profits of this business come from marketing or selling the results of operations. Business profits can also come from payments of bills, interest, payments from the government and all other sources that add to company assets (Kadariah et al. 1999).Income analysis is calculated based on the difference between total revenue (TR) and total cost (TC), the formula is as follows:

$$\textbf{Profit } (\pi) = \textbf{Total Revenue (TR)} - \textbf{Total Cost (TC)}$$

With the following business criteria:
• Total revenue> total cost, the business is said to be profitable
• Total revenue = total cost, the business is said to be profitable and not lose
• Total revenue <total costs, effort is said to be a loss

In this research, what is meant by business profit is the result of the amount of production (output) and the selling price. The average profit gained is Rp. 37,463,888. In this study, the biggest benefit gained was Rp. 53,800,000 and the smallest profit is Rp. 16,350,000. This is influenced by the business income obtained. The greater business income obtained, the greater business profits obtained.

b. Benefit Cost Ratio (BCR)

Benefit Cost Ratio or cost benefit analysis is a method used to evaluate a business. Cultivators compare the results of operations that are expected to be received at the time of harvest (income) with the costs to be incurred (Mubyarto 1989 in Masithoh H. N. 2006). The results of calculations from this analysis show that if the business is feasible to run, then the business is feasible to obtain investment for business development activities and if the results of the analysis show that a business is not feasible to run, it is necessary to evaluate an existing business. This analysis can be calculated using the formula:

$$\textbf{BCR} = \frac{\textbf{TR}}{\textbf{TC}}$$

Information:
TR = Total cultivation business income
TC = Total cost of cultivation business

With the following business criteria:
- BCR> 1, can be said to be feasible
- BCR <1, can be said to be inappropriate

From the research that has been done, the average value of BCR is 1.54. The biggest BCR value is 1.82 and the smallest is 1.21. This is influenced by the amount of income obtained and the total costs incurred. According to Gandhy (2018), the net B / C value of goldfish and tilapia culture in Cirata Reservoir floating cages is 2.06. This value is greater than 1, which means this business is feasible to run or run.

c. Break Even Point (BEP)

BEP is an analysis that provides information about what level of sales must be achieved so that the company does not lose and not make a profit. According to Simamora (2012: 170), BEP or break-even point is the sales volume where the amount of revenue and total expenses are the same, there is no net profit or loss. In addition, the BEP can also be used to see how far sales can still be tolerated (Jumingan 2008). The formula used to calculate BEP is:

$$BEP = \frac{Total\ operational\ cost}{Sales\ price}$$

From the research that has been done, the BEP value obtained for carp production is 840 kg at a price of Rp 23,333.33; for tilapia is 700 kg at a price of Rp 23,333.33 and for nilem fish is 954.54 kg at a price of Rp 52,500. The greater the operational costs and followed by the higher selling price of fish, the smaller the BEP value. If the greater operational costs and followed by a lower fish selling price, the BEP value will be even greater to return the capital spent.

d. Payback Period (PP)

This analysis is used to find out how long it will take to cover the investment costs invested. The payback period formula is:

$$Payback\ Period = \frac{\text{Total Cost}}{\text{Profit per Year}} \text{ x 1 tahun}$$

In the research that has been done, obtained an average value of PBP for 1.85 years. The fastest return is 1.21 years, while the longest return is 4.59 years. The less capital incurred and the greater the benefits obtained, the faster the return of capital, but the greater the costs incurred and the smaller the benefits obtained, the longer the return on capital.

e. Cost of Goods Sold (COGS)

According to Supriyono (2010), that the acquisition price or principal price is the amount that can be measured in units of cash in the form of cash paid or the value of other assets delivered, a value of services delivered, debt incurred and additional capital. This analysis is used for a comparison between all prices incurred to obtain goods sold with results from goods sold / sold. The HPP formula is:

$$\textbf{HPP} = \frac{\textbf{Total Operational Cost}}{\textbf{Production per kg}}$$

$$\textbf{HPP} = \frac{\textbf{Total Operational Cost}}{\textbf{Production per pcs}}$$

In the research that has been done, the average HPP acquisition for the price per kg is Rp. 8,488.3 and the average HPP for the price per fish is Rp. 2,122.07. This value indicates that the price to be given for per kg is Rp. 8,488.3 and the price to be given for each animal is Rp. 2,122.07.

CONCLUSIONS

The conclusion obtained from this study is that polyculture fish farming business activities in the Cirata Reservoir can be said to be feasible to run because it meets the criteria and results of the calculation of the financial analysis of a polyculture fish cultivation business in the Cirata Reservoir with an average business profit of Rp. 37,463,888.89 per maintenance season, the average BCR obtained was 1.54, the BEP per kg obtained for carp was 840 kg at a price of Rp 23,333.33; for fish is 700 kg with a price of Rp 23,333.33 and for nilem fish is 954.54 with a price of Rp 52,500, the average PP obtained is 1.85 and the average HPP for production / kg is Rp 8,488.3 whereas, for the average HPP production / pcs is Rp 2,122.07.

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