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Business Feasibility Analysis of Freshwater Pomfret (*Colossoma macropomum*) Enlargement in Cages in Penyasawan Village Kampar Regency Riau Province

Analisis Kelayakan Usaha Pembesaran Ikan Bawal Air Tawar (Colossoma macropomum) dalam Keramba di Desa Penyasawan Kabupaten Kampar Provinsi Riau

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Abstract

This research was carried out in Penyasawan Village on 28 March – 28 April 2022. This study aims to analyze the investment, total costs, income, profits, feasibility, and business prospects of freshwater pomfret enlargement in cages in Penyesawan Village. The method used in this study is a survey method with 32 respondents as freshwater pomfret cultivators. The analysis used in this research is business analysis. There are two sizes of cages cultivated by farmers, namely small cages (8×3×2 m) and large cages (10×3×2 m). The results showed that for small cages, the investment of IDR60.531.480/year, the total cost is IDR115.775.107/year, the income is IDR179.874.000/year, and the profit is Rp64.098.893/year. For large cages, the investment is IDR80.223.080/year, the total cost is IDR157.065.240/year, the income is IDR246.834.000/year, and the profit is IDR89.768.760/year. Based on business feasibility, large cages are more feasible than small cages. Based on the prospects, this business is good in terms of profit, marketing, and environmental carrying capacity.

Keywords: Business Feasibility, Cages, Freshwater Pomfret

Abstrak

Penelitian ini dilaksanakan di Desa Penyasawan pada tanggal 28 Maret – 28 April 2022. Penelitian ini bertujuan untuk menganalisis investasi, total biaya, pendapatan, keuntungan, kelayakan dan prospek usaha pembesaran ikan bawal air tawar dalam keramba di Desa Penyasawan. Metode yang digunakan dalam penelitian ini adalah metode survey dengan respondennya adalah pembudidaya ikan bawal air tawar sebanyak 32 orang. Analisis yang digunakan dalam penelitian ini adalah analisis usaha perikanan. Terdapat dua ukuran keramba yang diusahakan pembudidaya yaitu keramba ukuran kecil (8×3×2 m) dan ukuran besar (10×3×2 m). Hasil penelitian menunjukkan keramba ukuran kecil mempunyai investasi sebesar Rp60.531.480/tahun, total biaya sebesar Rp115.775.107/tahun, pendapatan sebesar adalah Rp179.874.000/tahun, dan keuntungan sebesar Rp64.098.893/tahun. Untuk keramba ukuran besar mempunyai investasi sebesar Rp80.223.080/tahun, total biaya sebesar Rp157.065.240/tahun, pendapatan sebesar Rp246.834.000/tahun, keuntungan sebesar Rp89.768.760/tahun. Berdasarkan kelayakan usaha, keramba ukuran besar lebih layak dibandingkan keramba ukuran kecil. Berdasarkan prospek, usaha ini baik ditinjau dari aspek keuntungan, pemasaran, dan daya dukung lingkungan yang baik.

Kata kunci: Kelayakan Usaha, Keramba, Bawal Air Tawar

1. Introduction

The Kampar Regency is one of the districts with relatively rapid development in the existing fisheries sub-sector, including caged fish cultivation. Production of fish cultivated in cages in Kampar Regency in 2020 was 7,002,792 tons (Kampar Regency Fisheries Service, 2021). Freshwater black pomfret is one of the fish cultivation commodities in cages with great potential for development (Arie, 2010). According to the Kampar Regency Fisheries Service (2021), freshwater black pomfret (*Colossoma macropomum*) production in cages in Kampar Regency is relatively high, with a total output of 132,864 kg.

Penyasawan Village is one of the villages in Kampar Regency where many freshwater black pomfret fish are cultivated in cages. In Penyasawan Village, there are 97 cages, which are divided into two sizes, namely 12×3×2 m cages and 6×3×2 m cages. According to the Kampar Regency Fisheries Service (2021), it is known that the number of fish cultivators in cages in Penyasawan Village is 32. The community of Penyasawan Village has started cultivating freshwater black pomfret fish in cages since 1997. Initially, only a few people were producing them, which has increased until now.

Freshwater black pomfret fish have a strategic contribution value in aquaculture to regional economic growth. According to the Kampar Regency Fisheries Service (2021), freshwater black pomfret production continues to increase yearly. The recorded output of freshwater black pomfret fish in Kampar Regency 2018 was 305,568 tons. In 2019, it was 306,785 tons, and in 2020 it was 307,932 tons. The yearly increase in freshwater black pomfret fish production shows that demand for freshwater black pomfret fish is still high. Therefore, freshwater black pomfret cultivation has become one of the profitable businesses in the aquaculture sector.

As business actors, farmers experience many problems in carrying out fish-rearing businesses, such as problems with capital, marketing, access to market information, etc. Due to these various problems and weaknesses, cultivators can experience the risk of failure. Therefore, it is necessary to carry out a business feasibility study to ensure that the business can be feasible by using the basic assumptions of a business feasibility study (Panjaitan, 2019). Efforts to determine the results of business feasibility are carried out by financial analysis in the form of calculating total investment, total costs, income, profits, Revenue Cost Ratio (RCR), Financial Rate of Return (FRR), and Payback Period of Capital (PPC) (Hendrik, 2013). This research aims to look at existing conditions and analyze the amount of investment and total costs, income and profits, business feasibility, and the prospects and constraints of developing a freshwater black pomfret fish rearing business in cages in Penyasawan Village.

2. Material and Method

2.1. Time and Place

This research was carried out for one month, March 28 – April 28, 2022, at Penyasawan Village, Kampar District, Kampar Regency, Riau Province. The location of this research was determined purposively with the consideration that in Penyasawan Village, many farmers cultivate freshwater black pomfret fish in cages.

2.2. Methods

The method used in this research is a survey method. Sugiyono (2017) states that the survey method obtains data from certain natural places. Still, researchers do not carry out any treatment in collecting data, for example, by distributing questionnaires, tests, structured interviews, and so on. Determining respondents in this study used the census method. The census method is a sampling technique in which all population members are used as samples. In this study, the respondents were all freshwater black pomfret fish cultivators in cages in Penyasawan Village with a population of 32 cultivators.

2.3. Data Analysis

Data analysis carried out in this research took the form of calculating total investment, total costs, income, profits, revenue cost ratio (R/C ratio), financial rate of return (FRR), and payback period of capital (PPC).

2.3.1. Total Investment

Investment is the investment of a certain amount of funds or other resources to obtain a certain amount of profit in the future. Investment is additional fixed capital (MT) and working capital (MK). According to Hendrik (2013), the formula used to calculate total investment is:

$$TI = MT + MK$$

Information:

IT: Investment (IDR); MT: Fixed Capital (IDR); MK: Working Capital (IDR)

2.3.2. Total Cost

Total costs (TC) are all costs incurred due to the ongoing production process, consisting of fixed and variable costs (Choliq *in* Damayanti, 2017). The formula for calculating total costs is:

$$TC = TVC + TFC$$

Information:

TC: Total Cost (IDR); TVC: Total variable costs (IDR); TFC: Total fixed costs (IDR)

2.3.3. Income

Income is all income obtained from the number of fish produced multiplied by the selling price of the fish (Fahrudin, 2018). It can be written with the following formula:

$$TR = Q - P$$

Information:

TR: Total income (IDR); Q: Amount of fish production (kg); P: The selling price of fish (IDR/kg)

2.3.4. Profit

Profit is the difference between total income and costs incurred (Helda *in* Aji, 2018). It can be written with the following formula:

$$\pi = TR - TC$$

Information:

π: Profit (IDR); TR: Total income (IDR); TC: Total cost (IDR);

2.3.5. Revenue Cost Ratio (R/C Ratio)

According to Fitri *in* Jamal (2018), the R/C ratio compares total income and costs. R/C ratio analysis is carried out to see how much income is obtained from each rupiah of expenses incurred in the fisheries business unit. This can be formulated as follows:

$$\text{R/C Ratio} = \frac{TR}{TC}$$

Information:

R/C Ratio: Revenue Cost Ratio; TR: Total income (IDR); TC: Total cost (IDR)

The decision criteria are that if the R/C value is > 1, the business is considered profitable. If the R/C value is < 1, then the company is assessed as making a loss. If the R/C value = 1, the business is considered break-even.

2.3.6. Financial Rate of Return (FRR)

The Financial Rate of Return (FRR) compares net income and investment multiplied by 100% (Riyanto *in* Hendrik, 2013). This can be formulated as follows:

$$FRR = \frac{\pi}{TI} \times 100\%$$

Information:

FRR: Financial Rate of Return*;* π: Profit (IDR); IT: Total investment (IDR)

Financial Rate of Return (FRR) is used as an investment feasibility criterion compared with bank deposit interest rates. If FRR > interest rate, it is best to invest in that business. If the FRR < bank interest rate, depositing business capital in a bank is better because it will be more profitable.

2.3.7. Payback Period of Capital (PPC)

The payback Period of Capital (PPC) is used to see how long it takes to return capital (Hendrik, 2013). The payback Period of Capital (PPC) compares total investment and profits multiplied by one year. Written with the formula:

$$PPC = \frac{TI}{\pi}$$

Information:

PPC: Payback Period of Capital (PPC); IT: Total investment (IDR); π: Profit (IDR)

The payback period criteria are as follows: if the payback period value obtained is < 3 years, then the return on business capital is categorized as fast and feasible. If the payback period value obtained is 3-5 years, the return on capital is classified as viable and moderate; if the payback period value is > 5 years, then the return on capital is categorized as slow and not feasible (Sari, 2021).

3. Result and Discussion

3.1. General Conditions of the Research Area

Penyasawan Village is a village located in Kampar District, Kampar Regency, Riau Province. Penyasawan Village has an area of 2041 ha. Penyasawan Village originally came from Kenegerian Air Tiris which was a Rukun Kampung (RK), and in 1967 RK Penyasawan was expanded to become Penyasawan Village.

Penyasawan Village is divided into four hamlets: Dusun Penyasawan Timur, Dusun Penyasawan Barat, Dusun Penyasawan Selatan, and Dusun Pontianak. Business activities for rearing freshwater black pomfret fish in cages in Penyasawan Village are in Dusun Penyasawan Timur. The Kampar River traverses Dusun Penyasawan Timur with a river water area of 7.47 ha.

3.2. Total Investment in the Business of Raising Freshwater Black Pomfret Fish in Cages in Penyasawan Village

Investment is the investment of a certain amount of funds or other resources to obtain future profits. Total investment is the sum of fixed and working capital (Hendrik, 2013). Fixed capital is in the form of costs for purchasing wooden blocks, plastic drums, nails, ropes, tin roofs, nets, tangguk, buckets, and expenses for making cages. Meanwhile, working capital is in the form of costs for purchasing seeds, feed, and medicines (Sasmi, 2015). The total investment spent by cultivators for the business of rearing freshwater black pomfret fish in cages in Penyasawan Village can be seen in Table 1.

Table 1. Average Total investment in freshwater black pomfret fish raising businesses in cages in Penyasawan Village

No	Component	Amount (IDR)
1.	Cage size 8×3×2 m	
	a. Fixed capital	26,530,000
	b. Working capital	34,001,480
Total Investment (IDR/Year)		60,531,480
2.	Cage size 10×3×2 m	
	a. Fixed capital	34,050,000
	b. Working capital	46,173,080
Total Investment (IDR/ year)		80,223,080

Based on Table 1. The average total investment spent by 8×3×2 m cage cultivators is IDR 60,531,480/year, while the average total investment spent by 10×3×2 m cage cultivators is IDR 80,223,080/year.

3.3. Total Cost of Farming Freshwater Black Pomfret Fish in Cages in Penyasawan Village

Total or operational costs are all costs incurred by cultivators during production. Total costs are fixed and variable (Choliq in Damayanti, 2017). Fixed charges include depreciation costs for cages and equipment and cage maintenance costs. Meanwhile, non-fixed prices include purchasing seeds, feed, medicines, labor, and harvest wages (Sasmi, 2015).

Table 2. Average total business costs for raising freshwater black pomfret fish in cages in Penyasawan Village

No	Component	Amount (IDR)
1.	Cage size 8×3×2 m	
	a. Fixed cost	6,870,667
	b. Variable cost	108,904,440
Total Cost (IDR/Year)		115.775.107
2.	Cage size 10×3×2 m	
	a. Fixed cost	8,646,000
	b. Variable cost	148,419,240
Total Cost (IDR/ year)		157,065,240

Based on Table 2, it can be seen that the average total costs incurred by farmers for cages measuring 8×3×2 m is IDR 115.775.107 /year while the average total costs incurred by cultivators for cages measuring 10×3×2 m is IDR 157.065.240 / year.

3.4. Business Income for Raising Freshwater Black Pomfret Fish in Cages in Penyasawan Village

Income in the fish cultivation business results from multiplying the effects of black pomfret fish production and the price of black pomfret fish (Fahrudin, 2018).

Table 3. Average business income for raising freshwater black pomfret fish in cages in Penyasawan Village

No	Cage Size	Cyclus (kg)	Annually (kg)	Selling Price (IDR/kg)	Cycle Income (IDR)	Income Annually (IDR)
1.	8×3×2	3,331	9,993	18,000	59,958,000	179,874,000
2.	10×3×2	4,571	13,713	18000	82,278,000	246,834,000

Based on Table 3, it can be seen that the selling price for freshwater black pomfret is IDR 18,000/kg. For cages measuring 8×3×2 m, fish production in one harvest is 3,331 kg and 9,993 kg per year. In one yield, an average income of IDR 59 is obtained. 958. 000 /profit and the average income is IDR 179 in one year. 874. 000 / year. Meanwhile, for fish cages measuring 10×3×2 m, fish production in one harvest is 4,571 kg and 13,713 kg

per year. In one yield, an average income of IDR 82 is obtained. 278. 000 / harvest and an average payment of IDR 246 is received in one year. 834. 000/year.

3.5. Benefits of the Business of Raising Freshwater Black Pomfret Fish in Cages in Penyasawan Village

Profit in a cultivation business is the difference between the income earned and the total costs incurred by the cultivator (Helda *in* Aji, 2018).

Table 4. Average profits from the business of raising freshwater black pomfret fish in Cages in Penyasawan Village

No	Component	Amount (IDR)
1.	Cage size 8×3×2 m	
	a. Income	179,874,000
	b. Total cost	115.775.107
Profit (IDR/Year)		64,098,893
2.	Cage size 10×3×2 m	
	a. Income	246,834,000
	b. Total cost	157,065,.40
Profit (IDR/Year)		89,768,760

Based on Table 4, it can be seen that the average profit earned by farmers from cages measuring 8×3×2 m is IDR 64.098, 893 / year, while for cages measuring 10×3×2 m, the average profit is IDR 89.768.760 / year. From these data, it can be interpreted that the profits obtained from cages measuring 10×3×2 m are greater than the profits obtained from cages measuring 8×3×2 m.

3.6. Feasibility Analysis of Freshwater Black Pomfret Fish Rearing Business in Cages in Penyasawan Village

The business feasibility analysis carried out aims to find out whether the business of rearing freshwater black pomfret fish in cages in Penyasawan Village is feasible to develop or not. Feasibility analysis uses several criteria, namely R/C Ratio (Revenue Cost Ratio), FRR (Financial Rate of Return), and PPC (Payback Period of Capital).

Table 5. Feasibility of rearing freshwater black pomfret fish in cages in Penyasawan Village

No	Component	Mark
1.	Cage size 8×3×2 m	
	a. R/C Ratio	1.55
	b. FRR	105.89
	c. PPC	0.94
2.	Cage size 10×3×2 m	
	a. R/C Ratio	1.57
	b. FRR	111.90
	c. PPC	0.89

The R/C Ratio value obtained for cages measuring 8×3×2 m is 1.55, and for cages measuring 10×3×2 m is 1.57. Every rupiah of costs spent by the cultivator will generate revenues of IDR 1.55 for cages measuring 8×3×2 m and IDR 1.57 for cages measuring 10×3×2 m. Based on the R/C Ratio calculations, it shows that rearing freshwater black pomfret fish in cages in Penyasawan Village is feasible to continue.

The FRR calculation shows an FRR value of 105.89 for a cage measuring 8×3×2 m and an FRR value of 111.90 for a cage measuring 10×3×2 m, which means that for every IDR 1 invested, a profit of 105.89% is obtained for a cage size of 8× 3×2 m and 111.90% for cages measuring 10×3×2 m. The FRR value obtained from the business of rearing freshwater black pomfret fish in cages in Penyasawan Village is greater than the BRI Bank deposit interest rate, thus indicating that the business of rearing freshwater black pomfret fish in cages in Penyasawan Village is worth continuing.

The PPC value obtained from efforts to rear freshwater black pomfret fish in cages in Penyasawan Village is 0.94 for cages measuring 10×3×2 m and 0.89 for cages measuring 10×3×2 m. The time required for returning capital for a cage measuring 8×3×2 m is 11 months and 8 days, and for a cage measuring 10×3×2 m is 10 months and 20 days.

According to research by Fransyus (2021), a feasibility analysis carried out on the black pomfret fish rearing business in cages in Teratak Buluh Village, Siak Hulu District, Kampar Regency, Riau Province, obtained an R/C ratio of 1.05, an FRR of 68% and a PPC of 2 year eight days. According to research by Zuriah (2016) regarding the prospects for growing black pomfret fish in Sukosari Village, Belitang District, Oku Timur Regency, an R/C ratio of 1.4 and an FRR of 42% were obtained. According to Pratiwi (2021) regarding the financial analysis of tilapia cultivation businesses in Merangin Village, Kuok District, Kampar Regency, Riau Province, an RCR value of 1.37 was obtained, an FRR value of 25.32% and a PPC of 3.9. Based on these studies, it is known that the freshwater black pomfret rearing business in Penyasawan Village is more feasible to develop because the business feasibility value obtained is higher, namely in cages measuring 8×3×2 m, the R/C

Ratio value is 1.55; FRR of 105.89; and PPC of 0.94. Meanwhile, for cages measuring 10×3×2 m, the R/C Ratio value was 1.57, FRR was 11.90 and PPC was 0.89. The high value of business feasibility obtained in rearing freshwater black pomfret fish in cages in Penyasawan Village is thought to be because farmers use a lot of alternative feed so that the costs incurred can be reduced and the profits obtained are greater.

3.7. Business Prospects for Raising Freshwater Black Pomfret Fish in Cages in Penyasawan Village

Fishing business prospects are opportunities that occur because of someone's efforts to meet their daily needs and also to gain profit (Adzhar, 2016). According to the Kampar Regency Fisheries Service (2021), Penyasawan Village is one of the areas that produces the most freshwater black pomfret in cages in the Kampar Regency area the great potential and prospects obtained from the business of rearing freshwater black pomfret fish in Penyasawan Village. The business of rearing black pomfret fish in cages in Penyasawan Village is very profitable from the aspect of profits obtained by farmers.

From the marketing aspect, the marketing of black pomfret fish produced in cages in Penyasawan Village is excellent because the black pomfret fish produced is sold to collecting traders who will immediately come to buy the fish if contacted by the cultivator. Black pomfret fish produced by freshwater black pomfret fish farmers in cages in Penyasawan Village is marketed in the districts of Kampar, Pasir Pengaraian, Taluk Kuantan, Bagan Batu, Air Molek, Ujung Batu and Koto Pinang.

Based on the carrying capacity of the Kampar River in developing the business of rearing freshwater black pomfret fish in cages in Penyasawan Village, Penyasawan Village is traversed by the Kampar River with an area of 7.47 ha, and there are 97 cage units. The river area used for the cage business is only 0.2617 ha, meaning that the Kampar River's utilization rate for rearing freshwater black pomfret fish in cages in Penyasawan Village is still 3.5%. The vast area of the Kampar River supports developing the business of rearing freshwater black pomfret fish in cages in Penyasawan Village.

Based on the business feasibility analysis carried out in the form of R/C Ratio, FRR, and PPC calculations, it shows that the business of rearing freshwater black pomfret fish in cages in Penyasawan Village is feasible to develop. Based on several aspects, it shows that the business of rearing freshwater black pomfret fish in Penyasawan Village has good prospects.

4. Conclusions

Based on the analysis of the freshwater black pomfret rearing business in Penyasawan Village, it can be concluded that this business is worthy of development in terms of profit, business feasibility, and development prospects. Based on business feasibility, large-sized cages are more feasible than small-sized cages. The opportunities for developing this business are excellent from profit, marketing, and good environmental support.

5. Suggestion

To increase the profits obtained, farmers should learn how to treat fish diseases so that fish infected with the disease can be cured and increase the profits obtained by farmers. Cultivators are also expected to form fisheries groups to get assistance from the Kampar Regency fisheries service through capital, seeds, feed, and counseling.

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