Feasibility Smulation of Eel (*Monopterus albus*) Cultivation In Clear Water

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Abstract

Before undertaking the cultivation of eel (Monopterus albus) in clear water to obtain optimal results, it is necessary to conduct a business feasibility analysis simulation study. This study aims to determine the feasibility analysis simulation of eel cultivation in clear water as an illustration to start aquaculture business. The method used in this study is a literature review or library research, where the data collection method is entirely with secondary data or literature study. Secondary data is collected by reviewing from references in the form of journals, books and online articles that are still related. The calculation of business feasibility analysis is carried out by calculating investment costs, fixed costs, variable costs, calculating production costs, revenues, R/C Ratio and PBP. The results of the calculation of the business feasibility simulation show that the production cost is Rp. 12,921,000/year, revenue of Rp. 25,350,000/year, a profit of Rp. 21,043,000, R/C Ratio of 1.6 and PBP (Payback Period) of 0.008 where the investment capital for eel cultivation will return in less than 1 year. Therefore, the eel cultivation business in the first quarter of 2022 can be said to be profitable and feasible.

Keywords: *Monopterus albus, Feasibility Analysis, eel cultivation*

Introduction

Eel is a freshwater fish that has economic value and has potential high market. The existence of eels in the wild is starting to be threatened. Therefore, it is necessary Efforts have been made to develop eel cultivation technology that is easy to apply in Public. The existence of eels in nature has begun to be threatened. This happens along with very rapid population growth so that there is a lot of rice fields converted into residential areas. In addition to land conversion, habitat is threatened This eel is a result of the contamination of rivers from urban areas that enter the area rice fields and coupled with the widespread use of pesticides by farmers. Contrary to this, the demand for this eel remains high so that sometimes the suppliers of eel have difficulty in meeting market needs the. In connection with the condition of the rice field eel which is starting to be threatened, it is necessary to developed eel fish farming technology that is easy to apply in the community. Eel cultivation is one of the businesses that is quite popular with the community because the market price of this fish is quite high, so it can be a good business opportunity promising. Cultivation of this eel is an environmentally friendly cultivation. One of This environmentally friendly eel cultivation system is to use water media clean. In addition to being environmentally friendly, this method has been proven to increase eel production in the field limited. Environmentally friendly clean water media cultivation system produces yielded water cultivation is odorless and very easy to monitor the development of eels. If compared with a cultivation system using mud media it will be difficult to monitoring the development of eels and yields at harvest is not the same. The clear water media maintenance system has been used in eel cultivation. Currently The system can produce a high survival value of eels, but the value of The specific growth rate obtained is still low. Maintenance of eels with conditions in accordance with the habitat in nature, namely the existence of hiding holes or other protection allows to optimize the production performance of eels.

Business feasibility analysis is used to identify businesses based on eligibility. It is based on the ratio of the value of revenue with cost (R/C ratio), benefit with cost (B/C) ratio, and return on investment (ROI). This can later be used for evaluation in carrying out business development with improvements based on production variables (Wulandari et al., 2019). invest in development of eel cultivation needs to be convinced by a tool analysis that can assess the feasibility of the

business as well as the rate of return to investment. The analysis tool is in the form of business feasibility study analysis in order to determine the feasibility and the amount of profit generated (Siswandoko et al., 2017). Therefore, a simulation study is needed on the feasibility analysis of eel cultivation in clear water. This study aims to determine the feasibility analysis simulation of eel cultivation in clear water as an illustration to start aquaculture business.

Methods

A simulation study on the feasibility analysis of eel (*Monopterus albus*) cultivation in clear water was carried out in the first quarter of 2022 between January-March. The method used is literature review or library research, where the data collection method is entirely with secondary data or library research. Secondary data is collected by reviewing references in the form of journals, books and online articles that are still related (Dadiono and Aminin, 2021; Halim et al., 2021), the study being studied is data on eel (Monopterus albus) cultivation in clear water includes a list of prices for tools, materials and service costs required. The data search was carried out using the Google search engine or Google Schoolar (Dadiono and Andayani, 2022), with the keywords eel cultivation (*Monopterus albus*). The data obtained were then analyzed using descriptive methods (Dadiono and Suryawinata, 2021; Dadiono et al., 2022). The descriptive method is carried out by describing the results of the discussion then drawing conclusions and calculating the feasibility of the business analysis (Halim and Dadiono, 2021; Dadiono and Suryawinata, 2022).

The simulation calculation of the feasibility analysis of eel (Monopterus albus) cultivation is carried out by calculating investment costs, fixed costs, and variable costs. Then proceed with the calculation of production costs, revenues, profits, R/C Ratio and PBP.

Results and Discussions

Investment Cost, Fixed Cost and Variable Cost

Eel is a freshwater fish that has a market price range of up to Rp. 65,000/kg. According to Scabra et al. (2019), based on data courtesy of Affandi et al. (2003), eels that live in the wild have begun to be threatened. Threatened existence This eel is because the area of rice fields is expanding along with the rapid population growth. In addition, the habitat of eels is also threatened due to river pollution. The high demand for eel in the market is in contrast to the condition of the eel's habitat which has been damaged. It is necessary to develop eel fish farming technology so that we are able to overcome the threats we face.

Table 1. Investment Cost and Fixed cost

Investment Cost			
No.	Production Equipment	Unit	Price
1	Terpaulin 3x1x0,75 m	5 Pieces	Rp 1.000.000
2	Raffia Ropes	3 Pieces	Rp 3.000
3	Aerators	1 Pieces	Rp. 450.000
4	Buckets	5 Pieces	Rp. 50.000 .
5	Pipes	5 Pieces	Rp.125.00
6	L Bow	5 Pieces	Rp.35.000
7	Nets	2 Pieces	Rp. 20.000
8	Digital Scales	1 Pieces	Rp. 100.000
9	Aerator Hose	1 roll	Rp. 90.000
10	Connect the Aerator Hose	1 Pieces	Rp. 20.000
Total			Rp 1.893.000
Fixed Cost			
1	Electricity	1 Year	Rp. 1.000.000
2	Water (PDAM)	1 Year	Rp. 1.000.000
3	Employee Cost	1 people at the start of production	Rp. 200.000
Total Fixed cost			Rp. 2.200.000

Cultivated eels will be sold for Rp. 60,000/kg. Investment costs (Table 1) are costs which is issued when the business activity is about to start. Eel cultivation is carried out using a 3x1x0.75 m tarpaulin pond. The total investment cost is Rp. 1.893.000. Fixed cost (Table 1) are the costs needed each year such as employee salaries, electricity costs, water costs, and so on other. The fixed cost required for this eel cultivation business is Rp. 2.200.000.

Variable costs (Table 2) are costs that will be incurred each production period. Number of needs Variable costs are uncertain and tend to be flexible and change over time. The total variable cost in this eel cultivation is Rp. 2.107.000.

Table 2. Variable Cost

No.	Production Material	Unit	Price
1	Eel seed	1300	Rp 750.000
3	Methyl blue	2 bottles	Rp 30.000
5	Probiotics	180 grams	Rp 30.000
6	Feed seeds	6 kg	Rp 162.000
7	Feed growth	147 kg	Rp 735.000
8	Operational cost	Flexible	Rp 200.000
9	Distribution cost	Flexible	Rp 200.000

	and Promotion		
Total Variabel cost			Rp 2.107.000

Business Feasibility Analysis Simulation

The simulation calculation of the feasibility analysis of eel cultivation is carried out by calculating production costs, revenues, profits, BEP Rupiah, BEP Units, R/C Ratio and PBP.

- Production cost
  Production Cost = Fixed Cost + Variable Cost
  = Rp. 2.200.000 + Rp. 2.107.000
  = Rp. 4.307.000/cycle x 3
  = Rp. 12.921.000

- Reception
  TR = Q x P
  SR production = SR x Number of Seeds
  = 80% x 1300
  = 1040 eel

  Where 1 kg of eels usually contains 8 eels, so 1040 eels will be about 130 kg.

  TR = Q x P
  = 130 kg x Rp. 65.000
  = Rp. 8.450.000/cycle x 3
  = Rp. 25.350.000/year

- Profit
  Profit = 1 year revenue – fixed costs – variable costs
  = Rp. 25.350.000 – Rp. 2.200.000 – Rp. 2.107.000 = Rp. 21.043.000

- R/C Ratio
  R/C Ratio = total revenue/production cost
  R/C Ratio = Rp. 21.043.000 / Rp. 12.921.000 = 1.6

  From the calculation of the R/C Ratio, the result is more than 1, which means that for every additional cost of Rp. 1, you will get an income of Rp. 1.6 or a profit of 1.6 times.

- PBP
  PBP = Investment/ Profit x 1 year
  PBP = Rp. 1.893.000/ Rp. 21.043.000 x 1
  = 0.08

The results of the calculation of PBP (Payback Period) describe that all the investment capital of this eel business will return in period of less than 1 year.

Conclusion

Based on the simulation of the business analysis carried out, the production of eel will gain 1.6 times the profit from the funding made and all investments made will be returned in less than 1 year. Therefore, it can be concluded that the eel cultivation business in clear water for the first quarter of 2022 can be said to be feasible.

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