



Financial Feasibility Analysis Of Oyster Mushroom Cultivation Business (Case Study of Tiga Putra Farm Oyster Mushroom Cultivation Business in Anduonohu Village, Poasia District, Kendari City)

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Abstract

This study aims to (1) analyze the financial feasibility of Tiga Putra Farm oyster mushroom farming in Anduonohu Village, Poasia District, Kendari City and (2) determine the sensitivity of the financial feasibility of Tiga Putra Farm oyster mushroom cultivation in Anduonohu Village, Poasia District, Kendari City. This research uses a case study method in the Tiga Putra Farm oyster mushroom cultivation in Anduonohu Village, Poasia District, Kendari City with the business owner being the informant in the study. The results showed that the financial aspect obtained an NPV value of Rp 37,525,391.33 with a discount factor rate of 14%, Net B/C of 3.37 and an IRR value of 55.89% and a Payback Period is 2.0 or 3 years and 3 months. This business is declared financially feasible. In addition, based on the calculation of sensitivity analysis carried out in three simulations, the business is still feasible to run even though in the first simulation, there was a decrease in oyster mushroom production by 7.45% and in the second simulation, an increase in operating costs by 6.16% and in the third simulation, for the condition of decreasing oyster mushroom production by 7.45% and increasing operating costs by 6.16% simultaneously, Tiga Putra Farm's oyster mushroom farming is still feasible to run.

Keywords: Financial Feasibility, Oyster Mushroom, Sensitivity Analysis.





INTRODUCTION

According to BPS Southeast Sulawesi (2021) , the agricultural sector has several subsectors, including food crops, horticultural crops, plantation crops, forestry crops, fisheries, and livestock. One of the agricultural subsectors that is very important in the Indonesian economy is the horticulture subsector. Horticulture has been and will continue to be an important subsector in the Indonesian economy (Poerwanto and Susila, 2021) .

According to Nur'aini (2019) horticultural crops are plants commonly grown by people in gardens or yards, such as vegetables, fruits, ornamental plants and medicinal plants. According to Achmat *et al.* (2011) in Ginting (2019) , one of the agricultural products that contain high nutritional value and one of the organic horticultural crops is mushrooms. Mushroom commodities have several types, one of which is mushrooms that are used as food is oyster mushrooms. According to Priyadi (2013) , that oyster mushrooms are mushrooms that have a soft and chewy mushroom fruit body morphology with many color variations that can be found, such as white, easy red, gray, yellow, light brown and black. Oyster mushrooms originally grew naturally on tree trunks that had weathered, generally easy to find in forest areas . Furthermore, according to Ayu (2016) , that oyster mushrooms are a type of woody mushroom that has a high nutritional content, in 100 grams of oyster mushrooms contains 10.5% - 30.4% protein, contains 1.7% - 2.2% fat, contains 56.6% carbohydrates, contains 0.20 mg thiamin, contains 4.7 mg - 4.9 mg riboflavin, contains 77.2 mg niacin, and contains 314 mg calcium.

The development of oyster mushroom cultivation has been widely developed in various regions in Indonesia, one of which is in Southeast Sulawesi. Its relatively easy cultivation and the benefits contained in oyster mushrooms are seen as business opportunities, so oyster mushroom cultivation entrepreneurs have also increased in number. Based on data from BPS Southeast Sulawesi (2021) , shows that the mushroom cultivation business began to be widely developed in various regions in Southeast Sulawesi , recorded in 2018 had a harvest area of 45 ha with a production of 35,000 kg, and in 2019 it increased with a harvest area of 165 ha with a production of 73.6 00 kg. The data shows an increase in the number of oyster mushroom entrepreneurs in Southeast Sulawesi Province.

Kendari City is the area with the largest population distribution rate in Southeast Sulawesi, namely 13.15% with a population of 345,107 people (BPS Sulawesi Southeast, 2021) . This can show the potential for the oyster mushroom business to develop in the city of Kendari, because the large population is expected to create a high demand for oyster mushrooms as well. This potential brought one of the oyster mushroom cultivation entrepreneurs named Rahmat Dwi Satrio to start his business in 2014 until now in Kendari City, the business is the Tiga Putra





Farm oyster mushroom cultivation business which is located in Andounohu Village, Poasia District, Kendari City. This business is a well-known oyster mushroom cultivation business and is visited by many consumers, this can be seen from the *rating of* oyster mushroom cultivation businesses that already have five stars on Google Search and Maps to date. The presence of the Tiga Putra Farm oyster mushroom cultivation business in Kendari City has contributed to meeting consumer demand for oyster mushrooms which are starting to have a lot of interest. Based on sales volume data, Tiga Putra Farm's oyster mushroom cultivation business shows an increase in sales volume from year to year. In 2014, with a production of 125 kg, until 2021, there was an increase in production of 510 kg. This also shows an increase in consumer interest and demand for oyster mushrooms in Kendari City.

Given that future conditions are filled with uncertainty, certain considerations are needed in starting and developing a business, where the basis of these considerations can be obtained through a study of various aspects regarding the feasibility of a business that will be run or has been run, so that the results of the study are used to make decisions about whether the business should be feasible or not if it is done or developed (Hidayat, 2011) . Therefore, it is necessary to conduct a study to help the owner of the Tiga Putra Farm oyster mushroom cultivation business in making considerations for decision making in developing a business in order to provide maximum benefits. Furthermore, according to Nurmalina *et al.* (2020) , said that a feasibility study is a review or analysis of whether an investment activity provides benefits or results when implemented or in other words a feasibility study is the basis for assessing whether investment activities in a business are feasible to run or develop. According to Hidayat (2011) , business feasibility studies are important because running a business uses limited resources and sources of funds and so that there is no waste of the use of these resources and sources of funds, it is necessary to consider whether the business being carried out is profitable or not. Then financially related to determining the need for funds and allocating them efficiently to provide maximum profit. Furthermore, Nurmalina *et al.* (2020) , said that feasibility based on financial aspects is used to calculate the amount of funds needed to build and then operate business activities.

In connection with this, financial business feasibility will be important knowledge for cultivators as a basis for rational consideration in developing oyster mushroom cultivation especially the Tiga Putra Farm oyster mushroom cultivation business. So that the author will conduct research on the oyster mushroom cultivation business to conduct a financial analysis as a basis for consideration for the Tiga Putra Farm oyster mushroom cultivator in Andounohu Village, Poasia District, Kendari City in developing the business he is doing.



METHOD

This research was conducted at Tiga Putra Farm Oyster Mushroom Cultivation Business located in Anduonohu Village, Poasia District, Kendari City, Southeast Sulawesi Province and was conducted from June 2022 to December 2022. Data collection techniques were carried out by participatory observation, interviews, and literature.

Data analysis in this study is quantitative in analyzing the financial feasibility of aquaculture. Quantitative analysis is used in measuring the amount of profit and financial feasibility and sensitivity analysis with the help of *Microsoft Excel 2016 software*. The data that has been obtained, then processed using the following formulas:

Financial Feasibility Analysis, the criteria commonly used to determine business feasibility are *Net Present Value (NPV)*, *Net Benefit Cost Ratio (Net B/C)*, *Internal Rate of Return (IRR)*, *Payback Period (PP)* and sensitivity analysis. The financial feasibility analysis in this study uses the economic life of the barn as the main investment in cultivating oyster mushrooms, which is eight years with an interest rate of 14% per year with the BRI Bank Micro KUR type.

1. *Net Present Value (NPV)*

Net Present Value is obtained from the difference between *benefits* and costs that have been adjusted at the interest rate per year (Devy *et al.*, 2018). According to Nurmalina *et al.* (2020), mathematically to calculate the NPV value can be formulated as follows:

$$NVP = \sum_{t=0}^8 \frac{B_t}{(1+i)^t} - \sum_{t=0}^8 \frac{C_t}{(1+i)^t} = \sum_{t=0}^8 \frac{B_t - C_t}{(1+i)^t}$$

Description:

NPV = *Net Present Value*

B_t = Benefit in year t

C_t = Cost in year t

t = Year of business activity (t = 0, 1, 2, 3, 4, 5, 6, 7, 8)

i = DR rate (%)

$\frac{1}{(1+i)^t}$ = *Discount Factor (DF)* in year t.

Kristiawan *et al.* (2017) assessment criteria for *Net Present Value (NPV)* are as follows:

- 1) If NPV > 0, it means that the Tiga Putra oyster mushroom cultivation business is feasible to implement, because the benefits obtained are greater than the costs incurred.
- 2) If NPV < 0, it means that the Tiga Putra oyster mushroom cultivation business is not feasible to implement, the benefits obtained are smaller than the costs incurred.

3) If NPV = 0, it means that the value of Tiga Putra's oyster mushroom cultivation business remains where the business has no loss and no profit.

2. Net Benefit-Cost Ratio (NBCR)

This *Net B/C* shows an illustration of how much *benefit* is obtained from each unit of cost incurred (Devy *et al.*, 2018) . According to Nurmalina *et al.* (2020) , mathematically to calculate the value of the *Net Benefit-Cost Ratio* can be expressed as follows:

$$Net\ B/C = \frac{\sum_{t=0}^8 \frac{B_t}{(1+i)^t}}{\sum_{t=0}^8 \frac{C_t}{(1+i)^t}}$$

Description:

Net B/C = *Net Benefit per Cost*

B_t = Benefit in year t

C_t = Cost in year t

t = Year of business activity ($t = 0, 1, 2, 3, 4, 5, 6, 7, 8$)

i = DR rate (%)

Three Putra Farm's oyster mushroom cultivation business is said to be feasible if the *Net B/C* is greater than one (*Net B/C* > 1) and is said to be unfeasible if the *Net B/C* is smaller than one (*Net B/C* < 1) (Nurmalina *et al.* ., 2020)

3. Internal Rate of Return (IRR)

Devy *et al.* (2018) That IRR is a measuring tool to determine the ability of the oyster mushroom cultivation business to return loan interest. According to Nurmalina *et al.* (2020) , mathematically to calculate the value of the *Internal Rate of Return* (IRR) can be expressed as follows:

$$IRR = i_1 + \frac{NPV_1}{NPV_1 + NPV_2} \times (i_2 - i_1)$$

Description:

IRR = *Internal Rate of Return*

i_1 = *Discount rate* that results in positive NPV

i_2 = *Discount rate* that results in negative NPV

NPV_1 = positive NPV

NPV_2 = negative NPV

It is said to be feasible if the IRR value of the Tiga Putra Farm oyster mushroom cultivation business is greater than the loan interest or *discount rate* ($IRR > DR$), otherwise if the IRR value is



smaller than the loan interest or *discount rate* ($IRR < DR$) then it is rejected (Kasmir and Jakfar, 2013) .

4. *Payback Period* (PP)

According to Devy *et al.* (2018) , *Payback Period* (PP) is used to analyze the length of time to return from business investment, therefore the unit of the result is not a percentage, but a unit of time (months, years, and so on). According to Nurmalina *et al.* (2020) , mathematically to calculate the *payback period* value can be expressed as follows:

$$PP = \frac{I}{Ab}$$

Description:

PP = *Payback period*

I = The amount of investment costs required

Ab = Net benefits that can be obtained in each year and have been discounted

The faster the payback time, the better the Tiga Putra Farm oyster mushroom cultivation business is to be cultivated or developed.

5. Sensitivity Analysis

According to Devy *et al.* (2018) , sensitivity analysis is carried out to see what happens to the results of financial analysis if there is an error or change in the calculation of costs or benefits. For this study, a sensitivity test was carried out on the decrease in the amount of oyster mushroom production due to weather and pest attacks and the increase in operational costs due to fluctuations in the need for the amount of raw materials and if both changes occurred simultaneously. Sensitivity tests were carried out on these components because they were considered the most important components in the Tiga Putra Farm oyster mushroom cultivation business. Sensitivity analysis is carried out so that it can be seen the percentage change in these components of the Tiga Putra Farm oyster mushroom cultivation business, so that it can be seen whether or not the Tiga Putra Farm oyster mushroom cultivation business is feasible. Determination of the percentage change in these components is done by looking at the state of the business regarding data on changes in the decline in production and changes in the increase in operational costs that have occurred during the life of the business.

RESULTS AND DISCUSSION

Assessment of the Financial Feasibility Analysis of Tiga Putra Farm's Oyster Mushroom Cultivation Business

Feasibility analysis was conducted to determine the feasibility of Tiga Putra Farm's oyster mushroom cultivation business from a financial aspect. The financial feasibility criteria used in



measuring the Tiga Putra Farm oyster mushroom cultivation business include *Net Present Value* (NPV), *Internal Rate of Return* (IRR), *Net Benefit Cost Ratio* (NBCR), and *Payback Period* (PP). The interest rate or *discount factor* used is an interest rate of 14% taken from the People's Business Credit (KUR) interest rate at Bank Rakyat Indonesia (BRI). The results of the financial feasibility analysis of Tiga Putra Farm's oyster mushroom cultivation business can be seen in table 1.

Table 1 Results of NPV, NBCR, IRR and PP Calculation of Oyster Mushroom Cultivation Business of Tiga Putra Farm

Assessment Criteria	Results	Description
Net Present Value (NPV)	37.525.391,33	Worth
Net Benefit Cost Ratio (NBCR)	3,37	Worth
Internal Rate of Return (IRR)	55,89	Worth
Payback Period (PP)	2,0	Worth

Source: Primary data processed, 2022

1. *Net Present Value* (NPV) Analysis

Net Present Value (NPV) analysis is used to determine the net present value of revenue obtained from an investment activity. The NPV calculation of Tiga Putra Farm's oyster mushroom cultivation business is based on data on the total *benefits* obtained and the total *costs* incurred each year. Based on the results of the NPV calculation presented in Appendix 10, it shows that the *net present value* (NPV) at a *discount factor* of 14% is IDR 37,525,391.33. According to Kristiawan *et al.* (2017) , if $NPV > 0$, it means that the Tiga Putra oyster mushroom cultivation business is feasible to implement, because the benefits obtained are greater than the costs incurred. So that the Tiga Putra oyster mushroom cultivation business Farm shows that this business is profitable and feasible to cultivate or develop because the NPV obtained is positive or greater than zero rupiah.

2. *Net Benefit Cost Ratio* (NBCR)

Net Benefit Cost Ratio (NBCR) is the ratio between positive net benefits (NPV+) and negative net benefits (NPV-). In other words, the *Net Benefit Cost Ratio* (NBCR) is used to determine the comparison between the present value of benefits and the present value of costs at an interest rate of 14%. Based on the results of the analysis, a positive NPV value is obtained with a *discount factor* of 14%, which is IDR 53,505,973.73, while a negative NPV value is obtained at a *discount factor* level of 60%, which is IDR 15,883,200.61 so that the NBCR value of 3.37 is



obtained. A business or investment activity can be said to be feasible if the Net B / C is greater than one and is said to be unfeasible if the Net B / C is smaller than one (Nurmalina *et al.*, 2020) . Thus the Tiga Putra Farm oyster mushroom cultivation business is feasible to be cultivated or developed because the NBCR value obtained is greater than one ($NBCR > 1$).

3. Internal Rate of Return (IRR)

Internal Rate of Return (IRR) is used to determine the rate of return on cultivation of a number of investments issued by the Tiga Putra Farm oyster mushroom cultivation business. The results of the IRR analysis show that the IRR value obtained is 55.89%. It is said to be feasible if the IRR value is greater than the loan interest or *discount rate*, otherwise if the IRR value is smaller than the loan interest or *discount rate*, it is rejected (Kasmir and Jakfar, 2013) . So that the results of the analysis of the IRR feasibility assessment criteria for the Tiga Putra Farm oyster mushroom cultivation business are declared to remain feasible or profitable because the IRR value of 55.89% is greater than the prevailing interest rate of 14%.

4. Payback Period (PP)

Payback Period shows the time required for Tiga Putra Farm's oyster mushroom cultivation business to return the investment capital that has been issued during the running of the business. Based on data on total investment costs and net benefits per year, it is known that the payback period of the Tiga Putra Farm oyster mushroom cultivation business is 2.0 or for two years. According to Nurmalina *et al.* (2020) , the faster the payback time, the Tiga Putra Farm oyster mushroom cultivation business is the better to be cultivated or developed. In other words, because the PP value of Tiga Putra Farm's oyster mushroom cultivation business is faster than the ongoing business life of 8 years, so the development of Tiga Putra Farm's oyster mushroom cultivation business is feasible to run.

5. Sensitivity Analysis

Sensitivity analysis is a simulation analysis used to determine the extent to which Tiga Putra Farm's oyster mushroom cultivation business is able to withstand changes that can occur. Sensitivity analysis in this study is based on a decrease in oyster mushroom production by 7.45% due to weather changes and pest attacks and an increase in operating costs due to fluctuations in the amount of raw materials by 6.16% and conditions if the two phenomena occur simultaneously. The percentage is determined based on data on changes in production and data on changes in costs that occur in the Tiga Putra Farm oyster mushroom cultivation business,



then analyzed to see the level of business sensitivity to percentage changes in investment criteria. The results of the sensitivity analysis of a 7.45% decrease in production due to weather changes and pest attacks and an increase in operating costs due to fluctuations in the amount of raw materials by 6.16% as well as the conditions for a decrease and increase in operating costs simultaneously are presented in Table 2.

Table 2 Calculation Results of Sensitivity Analysis of a 7.45% Decrease in Production and an Increase in Operating Costs of 6.16% and Conditions for a 7.45% Decrease in Production and an Increase in Operating Costs of 6.16% Occurring Simultaneously at Business B

No.	Description	%	Sensitivity Analysis Results			
			NPV (Rp)	NBCR	IRR (%)	PP (yr)
1	Production Decline	7,45	28.414.950,79	2,74	49,78	2,5
2	Increased Operating Costs	6,16	36.917.192,81	3,31	54,96	2,1
3	Decreased Honey Production and Increased Operating Costs	7.45 and 6.16	31.645.925,27	2,99	48,63	2,3

Source: Primary data processed, 2022

The first simulation, a decrease in oyster mushroom production of Tiga Putra Farm cultivation business by 7.45% with a *discount factor* of 14% due to weather changes. Under normal conditions, Tiga Putra Farm's oyster mushroom cultivation business produces an average oyster mushroom of 376.57 Kg per year and if there is a decrease in production by 7.45% which makes the average production per year to 348.51 Kg. Under these conditions, the Tiga Putra Farm oyster mushroom cultivation business is still feasible to run because the NPV value is greater than zero, which is Rp 28,414,950.79 and the *NBCR* value is 2.74 or greater than one ($NBCR > 1$) then the IRR value is 49.78 or greater than the prevailing interest rate of 14% with a PP value lower than the eight-year business life of 2.5 or two years and five months. So that the Tiga Putra Farm oyster mushroom cultivation business in cultivating white oyster mushrooms is still able to survive and is feasible to run or develop in the event of a 7.45% decrease in production.

The second simulation, an increase in operating costs by 6.16% with a *discount factor* of 14. Under normal conditions, the average value of total operating costs per year is Rp 1,994,319.90 and when experiencing an increase of 6.16%, the average operational cost per year increases to Rp 2,117,170.01. Under these conditions, the Tiga Putra Farm oyster mushroom



cultivation business is still feasible because the NPV value after an increase in operating costs of 6.16% obtained is IDR 36,917,192.81 or NPV is more than zero and the *NBCR* value is also obtained a value of 3.31 or greater than one ($NBCR > 1$). The IRR value obtained by the honey bee cultivation business is 54.96%, greater than the prevailing interest rate of 14% with a PP value lower than the eight-year business life of 2.1 or for two years and one month. So that the Tiga Putra Farm oyster mushroom cultivation business in cultivating white oyster mushrooms is still able to survive and is feasible to run or develop if there is an increase in operating costs of 6.16%.

Third simulation, simultaneous changes in production and operating costs, namely a decrease in oyster mushroom production by 7.45% and an increase in operating costs by 6.16% with a *discount factor* of 14%. The results of the analysis show that the Tiga Putra Farm oyster mushroom cultivation business is said to be feasible because the NPV value obtained is greater than zero, namely Rp 31,645,925.27 and the *NBCR* value is greater than one, namely 2.99 then the IRR value is greater than the prevailing interest rate value of 48.63%, and the PP value is lower than the 8-year business life of 2.3 or two years and three months. So that the Tiga Putra Farm oyster mushroom cultivation business in cultivating white oyster mushrooms is still able to survive and is feasible to run or develop if there is a the business.

Based on the results of the calculation, the overall Tiga Putra Farm oyster mushroom cultivation business is financially feasible. The resulting level of feasibility is quite large, this can be proven by the results of the calculation of NPV, *NBCR* and IRR analysis which are obtained quite large and the *Payback Period* (PP) is relatively short. In addition, Tiga Putra Farm's oyster mushroom cultivation business can also be said to be feasible in conditions of a decrease in production of 7.45% and an increase in operating costs of 6.16% and even if there is a decrease in production of 7.45% and an increase in operating costs of 6.16% simultaneously, Tiga Putra Farm's oyster mushroom cultivation business can still be said to be feasible.

CONCLUSION

Based on the description of the results and discussion of the research conducted, it can be concluded that the analysis of financial aspects based on financial feasibility criteria shows that this business is feasible to run or develop. This is because the NPV value obtained of Rp 37,525,391.33 is greater than zero ($NPV > 0$), the *NBCR* value of 3.37 is greater than one ($NBCR > 1$) and the IRR of 55.89% is greater than the *discount rate* (14%) determined ($IRR > DR$) and the PP value is lower than the eight-year business life of 2.0 or two years.





Sensitivity analysis of Tiga Putra Farm's oyster mushroom cultivation business based on the results of three simulations of changes to the cost and benefit components, namely a decrease in production by 7.45% and an increase in production operating costs by 6.16% and a decrease in production of 7.45% and an increase in operating costs of 6.16% simultaneously, Tiga Putra Farm's oyster mushroom cultivation business is still feasible to run or develop.

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