Financial Feasibility Analysis of Gourami Farming in A Collaborated Business Association System

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Abstract. As catch fisheries have experienced overfishing symptoms, which resulted in a decrease in fish resources, the government must develop freshwater aquaculture. Sleman Regency has known for its growing freshwater aquaculture development, which supplies about 70% of the total fish production in Yogyakarta Special Province. Despite the rising demand for fish consumption, fish cultivators face problems in the capital, infrastructure, weak bargaining power, quality problems, and long distribution chains. One way to overcome these problems is to strengthen the bargaining position through the fish farmer groups. This study aims to analyze the financial feasibility of gourami farming, whose owners are members of business associations. In the business association, fish farmers agree to collaborate in running their business to cultivate gourami in a supply chain process ranging from production to marketing. The collaboration of fish farmers integrates four segments of the fish-raising chain system, consist of seedling handling from 0 to 1.5 months old, raising fish from 1.5-to 3.5 months, from 3.5 to 6.5 months, and 6.5 to 12 months. Using a quantitative research method, this study analyzes 40 fish farmers in Seyegan, Sleman District of Yogyakarta. The financial feasibility analysis uses the net present value, benefit-cost ratio, internal rate of return, and break-even point. Results of these analyzes indicate that financially, the collaborative gourami farming in Seyegan District is feasible with an NPV of segment I is Rp 11,122,952.00, of segment II, is Rp 2,174,940.00, of segment III, is Rp 9,748,705.00. Of the segment, IV is Rp 18,691,435.86. The B/C Ratio for segment I is 1.87, segment II is 1.55, segment III is 2.13, and segment IV 2.05. The BEP value for segment I is Rp 1,709,228.00, for segment II is Rp 1,779,290.00, for segment III is Rp 852,100.00, and for segment IV is Rp 2,000,672.00.

1. Introduction

Gourami fish (Osphronemus gourami) is a type of freshwater consumption fish that is popular and in demand in Indonesia because of its distinctive taste and meat texture. Technically, in cultivation, the growth requires a long time and the stocking density is not too high. However, gourami still has a high and relatively stable selling value. Requires have a high economic value because apart from being widely preferred, it also has a relatively higher price than other freshwater fish types [1]. The advantage of gourami is that it is herbivorous. It can live in water environments with low oxygen

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levels without having to use special oxygen-enhancing tools. Gourami cultivation includes a profitable fishery business compared to other types of fresh fish[2]. Gourami fish is one of 15 types of fishery commodities aimed at increasing the production and income of cultivators and improving community nutrition. Carp has a high economic value because it is widely preferred and has a relatively higher price than other types of commonly marketed fish [3]. The mortality risk of gourami is lower than other fresh fish, feed for hatchery and rearing is available throughout the year, special seed cultivators produce many fish seeds, market demand is quite high and has not been fulfilled[4].

The development of the small-scale aquaculture industry in rural Indonesia faces four main problems: connectivity, inclusive growth, sustainability, and globalization. Cluster management is important in dealing with aquaculture development's main problems in rural areas [5]. Gourami cultivation technique has complex problems with market structure, capital, infrastructure, weak bargaining power, prices are always pressed, quality problems, and long distribution chain and shrinkage. One way to overcome this problem is to use a container for fish cultivators[6].

As an initial pilot, an association of gourami farmers has been formed in Seyegan Subdistrict, which is a group of gourami cultivators consisting of four segments, starting from segment I, which maintains seeds aged 0-1.5 months to segment IV, which maintains consumption fish aged 6.5–12 months. The collaboration system of gourami cultivation in a business association, to the best of the author's knowledge, has not been studied before. Therefore, this study aims to conduct a feasibility analysis to see the financial feasibility of the gourami cultivation association.

Many studies have been done in analyzing the feasibility of fisheries business, for example [10] [16-20]. However, the study that conducts detailed financial analyzes on each segment of the fish life cycle, especially where farmers are involved in an association, is still minimum. Therefore, this study attempts to fill this gap. The present study conducts in-depth studies where the financial analysis was carried out in each segment of cultivators, e.g., from fish cultivators as spawners (segment I), fish cultivators with the youngest age (segment II), juvenile fish cultivators (segment III) to adult fish cultivators, ready for consumption (segment IV) in a collaborative work of fish cultivator groups.

2. Contract Farming and Collaboration of Fish Farming in the Business Association

The concept of cooperation and mutual benefits for both parties in farmer groups in its implementation is closer to partnership (Contract Farming)[7]. Contract Farming has many advantages: minimizing supply chain risks, increasing farmer productivity, stimulating marketing activities, facilitating farmers' access to higher markets, and increasing total benefits for both stakeholders and farmers[8]. Besides, this concept has the appeal of influencing participation through knowledge obtained through education, access to credit, and certainty about the terms of contract requirements[9]. The farmer group's main objective is to strengthen farmers' bargaining position in managing the cultivation of gourami[10]. Through the association, it is hoped that mutually beneficial cooperation will be formed. One side of the association will assist with production facilities such as ponds, seeds, feed, human resource assistance. On the other hand, the members contribute to the association by doing fish farming under its management.

The association system is a method in marketing agricultural products in the fisheries subsector, which is applied to the gourami association in Seyegan District. In this association system, members are divided into four segments, agreed upon in the association. The division of this segment is adjusted to the growth of the gourami. These segments include segment I spawning/breeding, segment II nursery, segment III enlargement, and segment IV marketing for consumption.
3. Method

The present study is a quantitative research that utilizes descriptive statistics to analyze data. The analysis focuses on actual problems, which aims to describe systematically accurate and factual characteristics of a particular field [11]. In this study, data and information were collected to find out more about the agriculture problems to obtain a complete picture of matters relating to gourami agribusiness's association system.

The data in this study came from primary and secondary data. Primary data is data obtained directly from direct sources, namely gourami farmers, including land area, cost of seeds, cost of feed, cost of medicines, direct labor, age of farmers, farmer education level, cost of equipment depreciation, and other costs. Secondary data is data obtained from indirect sources covering matters related to the problems studied, such as gourami's potential and the development of gourami farmers' productivity.

This research uses quantitative methods. The method of selecting gourami farmers' samples by purposive sampling is that respondents are selected based on predetermined criteria, namely: farmers who cultivate gourami by the association system. Sampling was done by random sampling of 30 gourami farmers with an association system.

Economic analysis is needed to measure the business activities carried out to benefit business owners and the wider community [12]. The business run by carp cultivators in Sussuhbango Village is economically feasible or not measured by financial feasibility in the form of NPV, BCR, IRR, and PBP [3] with the following formula [13]:

3.1. Net Present Value (NPV)

NPV is the difference between the benefits and costs that produce net benefits and present value. NPV is said to be feasible if it is positive or greater than zero.

\[ NPV = \sum_{t=0}^{n} \frac{(B_t - C_t)}{(1 + i)^t} \]

Information:
- \( B_t \) = Benefit due to investment in year \( t \)
- \( C_t \) = Annual cost due to investment in year \( t \)
- \( i \) = The interest rate on the loan
- \( t \) = Age of the project of a business \( (t = 0, 1, 2, 3, \ldots, n) \)

3.2. Benefit-Cost Ratio (BCR)

B/C is the ratio between the present value of net cash and the present value of the business's investment. B/C Ratio is feasible if the B/C value is more than 1; while the B/C is less than 1, the business is not feasible.

\[ \frac{B}{C} = \frac{\sum_{t=1}^{n} \frac{(B_t - C_t)}{(1 + i)^t}}{\sum_{t=1}^{n} \frac{(C_t - B_t)}{(1 + i)^t}} \]

Information:
- \( B_t \) = Benefit due to investment in year \( t \)
- \( C_t \) = Annual cost due to investment in year \( t \)
- \( i \) = Interest rate
- \( t \) = Age of the project of a business \( (t = 0, 1, 2, 3, \ldots, n) \)

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**Figure 1.** Schematic of segment division in the Association system gourami business in Seyegan District.

| Segment I | Segment II | Segment III | Segment IV |
|-----------|------------|-------------|------------|
| Hatchery  | Nursery    | Enlargement | Consumption|
| 0-1.5 months | 1.5-3.5 months | 3.5-6.5 months | 6.5-12 months |
The eligibility criteria for the Net B / C method are:
Net B / C ≥ 1; then the effort is worth doing
Net B / C ≤ 1; then the effort is not worth doing

3.3. Internal Rate of Return (IRR)
IRR is the calculation of the interest rate by equating the present value of the expected cash flows in the future with the initial investment value. If the IRR value is greater than the discount factor, the business is feasible to run.

\[ IRR = i' + \frac{NPV'}{NPV''} (l'' - l') \]  

Information:
i' = the interest rate which causes the NPV > 0
i" = Interest rate that causes NPV < 0
IRR≥ i; then the effort is worth continuing
IRR≤ i; then the business is not worth continuing or better to stop

3.4. Payback Periode (PBP)
The payback period is the ability of a business to return investment expenditures in a certain period. The faster the return on investment, the more feasible the business is being carried out.

\[ BEP = \frac{FC}{l' - VC/R} \]

Information:
FC = Fixed Cost (Rp/Year)
VC = Variable Cost (Rp/Year)
R = Selling Value (Rp)

4. Results and discussion
As stated earlier, the gourami business association's collaborative fish farming system is a group of gourami cultivation businesses divided into four segments of cultivation business according to fish age. This section provides the calculation of fixed costs incurred in each segment, presented in Table 1.

Fixed costs are costs whose amount is not affected by business activity/business volume [15]. This study, which includes fixed costs, is the cost of depreciation of equipment each year and other costs such as land tax, group fees, irrigation fees, and pool rent.

| Segment | Tools Depreciation (Rp) | Tax of Land (Rp) | Dues of Association (Rp) | Duet of Irrigation (Rp) | Pool Rental (Rp) | Pool Depreciation (Rp) | Total Cost (Rp) |
|---------|------------------------|------------------|--------------------------|------------------------|-----------------|------------------------|-----------------|
| Segmen - I | 75,233.00 | 16,666.00 | 50,000.00 | 40,000.00 | - | 100,166.00 | 282,066.00 |
| Segmen - II | 66,897.00 | 1,333.00 | 50,000.00 | 60,000.00 | - | 89,297.00 | 267,528.00 |
| Segmen - III | 66,700.00 | 2,062.00 | 50,000.00 | - | 18,750.00 | 17,587.00 | 155,100.00 |
| Segmen - IV | 155,587.00 | 10,538.00 | 50,000.00 | 16,923.00 | 13,461.00 | 109,762.00 | 356,273.00 |

As shown in Table 1, the highest fixed cost of gourami is in segment IV, namely Rp. 356,273.11 while the lowest fixed cost is in segment III Rp. 155,100.00. Costs that must be borne annually include pool rental costs, tax fees, group fees, irrigation fees, and depreciation costs for equipment and pools. The collaborative system of gourami farming in association uses complete equipment to support
increased production and is shared by association members. Variable costs are costs whose amount is influenced by the volume of production carried out[14]. Included in the variable costs in gourami cultivation: pond maintenance labor costs, fish seed purchasing costs, fish feed costs, medicine costs, and transportation costs. Variable costs are an instrument for managing production costs so that profits can be obtained optimally.

**Table 2. Labor Costs of Gourami Fish per Season in Seyegan District, 2016-2018**

| Segment | Labor Inside Volume (HKO) | The Family Value (Rp) | Labor Outside Volume (HKO) | The Family Value (Rp) | Total Labor Cost (Rp) |
|---------|---------------------------|-----------------------|----------------------------|-----------------------|----------------------|
| I       | 1.46                      | 28,266.00             | 0.51                       | 11,915.00             | 52,068.00            |
| II      | 1.17                      | 28,123.00             | 1.02                       | 29,510.00             | 46,603.00            |
| III     | 1.46                      | 26,321.00             | 0.76                       | 22,273.00             | 52,917.00            |
| IV      | 1.30                      | 32,807.00             | 0.53                       | 20,674.00             | 61,433.00            |

Based on Table 2, it can be seen that the use of labor within the family is greater than that of outside the family. This result suggests that the gourami business in Seyegan District is still a side business activity for some families only. From the data on average labor costs per season above, it can be seen that the highest use of labor in the family is in the segment I and II at 1.46 HKO, and the lowest use of labor in the family is in the gourami business, the association system of segment II, namely 1.17 HKO. On the other hand, the use of labor outside the family with the highest Person Work Day is in segment II, namely 1.02, and the lowest is in the segment I at 0.51. The cost of labor outside the family used is relatively the same and does not differ too much.

**Table 3. Cost of Production Facilities for Gourami Fish Business per Season in Seyegan District, 2016-2018**

| Segment | Leaf (Rp) | Seeds (Rp) | Feed (Rp) | Drug (Rp) | Transport (Rp) | Total Cost (Rp) |
|---------|-----------|------------|-----------|-----------|----------------|----------------|
| I       | -         | 344,094.00 | 239,586.00| -         | 7,983.00       | 591,664.00     |
| II      | 11,000.00 | 356,748.00 | 208,840.00| 4,828.00  | 7,451.00       | 588,869.00     |
| III     | 31,125.00 | 901,650.00 | 215,513.00| 32.00     | 11,241.00      | 1,159,562.00   |
| IV      | 44,319.00 | 2,282,609.00| 1,142,380.00| 644.00 | 11,644.00 | 3,481,599.00 |

Table 3 above shows that the highest cost of production facilities is in segment III of Rp 3,481,599.00 and the lowest cost is in the gourami business with the association system segment II which is only Rp 588,869.00. The length of time to keep fish will also affect the number of costs used in the business. The longer the maintenance time for gourami, the more feed will be consumed.

**Table 4. Variable Costs per Season of Gourami Business in Seyegan District, 2016-2018**

| Segment | Cost of Labor (Rp) | Cost of Production (Rp) | Total Cost (Rp) |
|---------|--------------------|-------------------------|-----------------|
| I       | 52,068.00          | 591,664.00              | 643,732.00      |
| II      | 46,603.00          | 588,869.00              | 635,472.00      |
| III     | 52,917.04          | 1,159,562.00             | 1,212,479.00    |
| IV      | 61,433.00          | 3,481,599.00             | 3,543,032.00    |

Table 4 data above shows that the largest variable cost is in segment IV worth Rp 3,543,032.00. Meanwhile, the lowest variable cost is in segment II, which is Rp 635,472.00. The gourami business's total cost is the total amount of costs used in conducting the gourami business. These costs include
investment costs, fixed costs, and variable costs. It is very important to know the total cost of this business to calculate the income and profit that the farmer gets.

Table 5. Total Costs per Season of Gourami Business in Seyegan District, 2016-2018

| Segmen   | Fixed Cost (Rp) | Labor Cost (Rp) | Variable Facilities (Rp) | Total Cost (Rp) | Percentage (%) |
|----------|-----------------|-----------------|--------------------------|-----------------|----------------|
| Segmen - I | 282,066.00      | 52,068.00       | 591,664.00               | 925,799.00      | 8.10           |
| Segmen - II | 267,528.00      | 46,603.00       | 588,869.00               | 90,000.00       | 7.90           |
| Segmen - III | 155,100.00     | 52,917.00       | 1,159,562.00             | 1,367,579.00    | 11.96          |
| Segmen - IV | 356,273.00      | 6,433.00        | 3,481,599.00             | 3,899,305.00    | 34.10          |

Table 5 shows that the largest total cost was in segment IV of 34.10% or Rp 3,388,305.00 and the lowest in segment II was 7.90% or Rp 903,000.00. The total cost of gourami business with the association system, especially segment I-III, is almost the same with a percentage ranging from 8-11%; this is because in this segment, namely growing seedlings generally only require a short time in cultivation so that the costs required are not too large as in segment IV. Table 5. illustrates that segment I-III gourami farmers can reduce the number of costs incurred in doing the gourami business. The association system is one of the alternatives to anticipate the length of cultivation time and save the cost of gourami feed. The common obstacle in producing gourami is the length of time to keep it from seed to harvest.

Revenue is the amount of money received from the sale of goods or output. Hence, the gourami business revenue here results from the product (gourami) times the selling price. The revenue of gourami cultivation in Seyegan District is presented in Table 6.

Table 6. Production and Revenue per Season of Gourami Business in Seyegan District, 2016-2018

| Segmen   | Fish Volume | Production Value (Rp) | Revenue (Rp) |
|----------|-------------|-----------------------|--------------|
| Segmen - I | 4,554.00    | 27.00                 | 1,266,089.00 |
| Segmen - II | 593.00      | 1,821.00              | 1,068,991.00 |
| Segmen - III | 588.00     | 5,422.00              | 2,522,905.00 |
| Segmen - IV | 261.40      | 28,264.00             | 3,360,883.00 |

Table 6 shows that the largest total revenue is in segment IV worth Rp 3,360,883.00 while the lowest revenue is in segment II of Rp 1,068,991.00. The reason why segment II has the lowest revenue is that the segment is in the period of enlargement of the seeds, the age of 1.5-3.5 months. It is the period of the gourami seeds which are most susceptible to death. In this segment, the mortality rate of gourami seeds is the highest compared to other segments. Several factors, including 1) cause this) Replacement of maintenance media. When the gourami seeds are in segment I, the gourami seeds are in a special closed pond/tub and then begin to enter segment II; they are released in an open rearing pond so that the gourami seeds need to adapt to their new environment. 2) Substitution of fish feed. In segment II, gourami seedlings were given feed in the form of pellets from previously silkworms. The gourami price level also influences the amount of gourami business revenue at a certain time. Farmers' income will increase when the market price of gourami is rising. Meanwhile, the income of farmers will decrease as the price of gourami in the market has decreased. The ups and downs of gourami prices in the market are influenced by the season. Changes in this season have greatly affected sales of gourami seeds.

In the months with high rainwater, which is in November-June, the price of gourami seeds is quite high, but the fish price for consumption decreases. On the other hand, in the months with little rainfall, namely July-October, gourami seeds' price tends to fall (low), but consumption-sized gourami will
increase. The difference in the high and low price of seeds and the price of consumption gourami is due to the months with high rainfall, which is a good season for cultivating gourami so that many fish farmers cultivate them so that the price of seeds will increase. Conversely, the dry season is an unfavorable season for cultivating gourami, so the demand for seeds decreases. The hot temperature in the dry season is the cause of many viruses and death in gourami seeds. In the dry season, the farmers who cultivate gourami decrease, the decrease in demand for seeds results in the price of seeds going down. On the other hand, the small number of farmers who cultivate gourami during the dry season has caused the supply of consumption gourami to decrease and thus triggered an increase in gourami price. So it can be concluded that during the rainy season, the price of gourami seeds will increase, but the price for consumption gourami will decrease. On the other hand, during the dry season, gourami seeds' price will go down, but the price for consumption gourami will increase. In this study, which focuses on the formation of gourami business collaboration in the association system, researchers also found advantages and disadvantages that affect gourami production. The disadvantages should be managed carefully in running the business.

A research study on the role of POKDAKAN Ulam Sari, shows that group administrators propose terms and regulations that apply to prospective members. Requirements that must be met by members include: 1) following group recommendations in cultivation techniques, 2) marketing must go through groups, 3) marketing results must be divided into groups 15% of net profits after deducting capital costs for 6 months (2.5%/month), 4) attend routine meetings every month, 5) participate in activities held by the group. Each member receives various kinds of cultivation supporting factors such as 1) cultivation pond, 2) gourami seeds, 3) training related to gourami rearing through counseling, 4) training on simple farm records during the cultivation process, 5) selling prices stable. Basically, members benefit greatly from only taking their time and energy to cultivating and ultimately enjoy the results [10]. Malika et al. (2012) added that institutions could increase understanding of fishery product standards for cultivators to improve product quality and face market demands [15]. The study on the analysis of gourami nursery business development strategies in Sumedang Regency shows the ability of the Mina Mukti Group to overcome threats that must be faced by taking advantage of existing opportunities that are quite good [16].

4.1. Profitability of gourami farming

The profit is the difference between the production value and the costs incurred, both implicit and explicit [17]. The calculation of the profits from gourami's business is the amount of revenue minus fixed and variable costs, including labor costs in the family and expenses from all production facilities.

**Table 7. Profits of Gourami Fish Business in Seyegan District, 2016-2018**

| Segmen  | Fixed cost (Rp) | Variable Cost (Rp) | Revenue (Rp) | Profit (Rp) |
|---------|----------------|-------------------|--------------|-------------|
| Segmen - I | 846,200.00     | 14,703,384.00     | 29,120,062.00| 13,570,477.00|
| Segmen - II | 802,584.00     | 4,107,609.00     | 7,482,938.00 | 2,497,744.00 |
| Segmen - III | 465,300.00   | 10,307,173.00     | 22,706,150.00| 11,650,926.00 |
| Segmen - IV | 1,068,819.00   | 20,823,746.00    | 44,708,212.00| 22,525,801.00 |

Table 7 presents the calculation of the profit of the gourami business (π = TR-TC) [18]. The highest profit is segment IV with a value of Rp 22,525,801.25, and the lowest profit is in segment II, which is only around Rp 2,497,744.85. The research results that gourami farming in Kencong District, Jember Regency, is economically profitable with Rp's average profit Rp 7,090,739.00/100m², gourami farming is economically efficient with an R/C ratio of 1.57 [19].
4.2. Financial Feasibility Analysis

4.2.1. Net Present Value (NPV)

We calculate the NPV value of the total revenue and expense of each segment. The NPV calculation can be done using the following formula. The total present value of revenues - Total present value of expenses= obtain NPV segment I = Rp 11,122,952.92 NPV segment II = Rp 2,174,940.40 NPV segment III = Rp 9,748,705.11 NPV segment IV = Rp 18,691,435.86. Looking at the results of the financial calculations above, it is found that the highest share of revenue earned is in segment IV, namely Rp 18,691,435.86, while the smallest financial value is in segment II Rp 2,174,940.40. The total NPV value of the collaboration system gourami business is Rp 41,738,034.29. Considering that the value obtained from each of these businesses is greater than zero (NPV> 0) [20], then the gourami cultivation business is said to be feasible.

4.2.2. Benefit-Cost Ratio (BCR)

The value of the B/C Ratio for each segment can be calculated as follows.

For segment I: B/C Ratio = Rp 23.875.078.00 / Rp 12.752.125.00 = 1.87
For segment II: B/C Ratio = Rp 6.400.962.00 / Rp 4.119.924.00 = 1.55
For segment III: B/C Ratio = Rp 18.783.420.00 / Rp 8.804.929.00 = 2.13
For segment IV: B/C Ratio = Rp Rp. 37.010.169.00 / Rp 18.080.468.00 = 2.05

A business can be selected if the B/C Ratio value is > 1 [21]. The B/C ratio analysis results indicate that the business is feasible and profitable if undertaken since each business has a value greater than one. From the data, the highest B/C Ratio value is found in segment III, which is 2.13, and the lowest B/C Ratio value is in segment II, which is 1.55. The calculation shows that the B/C Ratio of all segments is above 1 [13]. It can be stated that the business collaboration in the business association is worth being done.

4.2.3. Internal Rate of Return (IRR)

The value of IRR can be calculated as follow, presented in Table 8.

Table 8. Internal Rate of Return (IRR)

| Segmen  | IRR (%) |
|---------|---------|
| Segment - I | 84.71  |
| Segment - II | 78.87  |
| Segment - III | 75.83  |
| Segment - IV | 76.23  |

A business is worth running if the IRR value is higher than the current interest rate. In the data analysis above, it was found that all IRR values in the gourami business in Seyegan District were higher than the interest rate, 10.25%, Hence the business collaboration in the association system is declared to be feasible.

4.2.4. Brek Event Point (BEP)

BEP is a condition when the business's output is the same as the capital issued. The business is carried out does not generate profits but also does not experience losses [22].

The results of the BEP analysis of the gourami business in each segment is as follows. Segment I is Rp 1,709,228.52; segment II is Rp 1,779,290.27; segment III is Rp 852,100.33; segment IV Rp 2,000,672.74, so the total value of BEP of segments I – IV is Rp 6,122,506.00. The results of research Small Scale Aquaculture: A Case Study of Gourami (Osphronemus Gourami) in Mojosari Village, Kras District, Kediri Regency shows that the cultivation of gourami in both large and narrow-scale ponds is both profitable and feasible to continue. The narrow pool's total cost is Rp 25,855,334.00 and
in the large pool is Rp 44,170,834.00. Production in narrow ponds is 1,342 kg and in large ponds is 2,157 kg with a fish price of Rp 32,000 per kg. The average total income of gourami in a narrow and wide pond is Rp 42,944,000.00 and Rp 69,024,000.00, respectively, with an average income of Rp 17,088,666.00 and Rp. 24,853,666.00 [14]. The break-even analysis explains how the farmer gets back the money invested. Fish farmers need to break even in the agricultural business for a certain period of time. Still, they must sustainably manage the business to get back all the money invested. The level of profit is very minimal due to high operational costs, including expensive feed. High feed costs are a challenge affecting fish production, as highlighted by various studies in Uganda [9,22], Nigeria [17,23,24], and Kenya [25]. This problem can be overcome through research on inexpensive alternative plant protein sources to replace expensive fishmeal. Proper stocking density, water fertilization, and efficient feed use are essential for increasing Uganda's fish production [18].

5. Conclusion

This study aims to analyze the gourami business's financial feasibility, where the owner or farmers agree to integrate their business in a collaborative supply chain system in the business association. There are four segments in the business collaboration system located in Seyegan District. The results of the financial analysis indicate that the business is financially profitable. The profit in the segment I am Rp 13,570,477.00, in segment II is Rp. 2,497,744.00, in segment III is Rp. 11,650,926.00, and in segment, IV is Rp 22,525,801.00.

The business collaboration is also financially feasible. We conclude these results based on the NPV, BEP, and B/C ratio results. The NPV in segment I is Rp 11,122,952.00; in segment II is Rp 2,174,940.00; in segment III is Rp 9,748,705.00 and in segment IV is Rp 18,691,435.86. The B/C Ratio for segment I is 1.87, for segment II is 1.55, for segment III is 2.13, and segment IV is 2.05. The BEP for segment I is Rp 1,709,228.00; segment II is Rp 1,779,290.00; segment III is Rp 852,100.00 and for segment is IV Rp 2,000,672.00.

6. Acknowledgments

The authors would like to express their gratitude to the Faculty of Agriculture, Janabadra University for providing financial assistance for the implementation of this research. Thanks also to the gourami farming community in the Seyegan sub-district, Sleman, Yogyakarta Special Province.

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