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COST AND PROFIT ANALYSIS OF BALI GOLDFISH FARMING AT POKDAKAN KOIYOGAN KAZOKU RANA

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ABSTRACT

The waters in Indonesia are very vast and consist of freshwater and seawater. Indonesia has a high diversity of freshwater resources, one of which is goldfish. This study aims to analyze the costs and benefits of Bali goldfish farming at the Koiyogan Kazoku Rana fish farming group and the feasibility of Bali goldfish farming at the Koiyogan Kazoku Rana fish farming group. This research was conducted from July to August 2024 at the Koiyogan Kazoku Rana fish farming group located in Bunutin Village, Bangli District, Bangli Regency, Bali Province. This study uses a quantitative method using cost and income data analysis, business feasibility. The results of this study indicate that the production cost of Bali goldfish at the Koiyogan Kazoku Rana fish farming group is IDR 3,919,042 per harvest, consisting of fixed costs of IDR 1,658,542 per harvest and variable costs of IDR 2,260,500 per harvest. The income generated is 11,280,958 with a revenue value of Rp 15,200,000 and a production cost value of Rp 3,919,042 per harvest. The R/C value is greater than 1, which is 3.8. An R/C value greater than one indicates that the Bali goldfish farming business at the Koiyogan Kazoku Rana Layal Pokdakan is suitable for development.

Keywords: goldfish, analysis, income, cultivation

I. INTRODUCTION

Regions with continuously increasing market demand and strong marketing potential have made the cultivation of goldfish (*Carassius auratus*) a promising ornamental fishery business. Bali is one of the regions with the greatest potential for goldfish cultivation businesses. As one of the world's international tourist destinations, Bali has a high demand for ornamental fish, not only in the local market but also for export purposes. Their attractive colors and unique body shapes make goldfish a highly sought-after ornamental fish commodity among collectors, fish enthusiasts, as well as hotels and restaurants.

However, like other agricultural or aquaculture businesses, goldfish farming also faces challenges related to efficient production cost management and the optimization of potential profits. In goldfish cultivation, it is necessary to optimize the management of production costs, including both variable and fixed costs, in order to ensure business profitability. Several cost components in goldfish farming include seed costs, feed, labor, pond equipment, and other operational costs related to maintaining water quality and fish health.

As public interest in goldfish continues to increase, the main challenge for goldfish farmers in Bali is how to manage production costs efficiently without sacrificing the quality of the fish produced. In addition, fluctuating selling prices and increasingly intense market competition also affect the level of profit that can be obtained. Therefore, a comprehensive understanding of cost and profit analysis in goldfish cultivation is crucial for farmers and other business actors in order to make proper and accurate business management decisions.

Through cost and profit analysis, farmers can identify in detail the cost components incurred at each stage of production, calculate the profits earned, and determine factors that can improve business efficiency. Thus, this analysis will provide a detailed representation of the economic feasibility of goldfish cultivation businesses in Bali and whether these businesses can be expanded on a larger scale in the future.

Bangli is known as one of the regions in Bali Province famous for ornamental fish cultivation. The presence of goldfish and tilapia as endemic ornamental fish is one of the distinctive characteristics of Bangli Regency. Currently, goldfish are among the most popular ornamental fish among fish enthusiasts. This condition occurs because goldfish have more attractive shapes and colors compared to other ornamental fish. In general, ornamental fish have relatively high economic value.

Pokdakan Koiyogan Kazoku Rana is recognized as an ornamental fish farming group that has been actively conducting cultivation activities since 2017 and was officially inaugurated in 2022. The advantage of Pokdakan Koiyogan lies in the cultivation of Balinese goldfish, which have distinctive characteristics such as

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short egg-shaped bodies, butterfly-shaped fins (generally longer than the fish body), longer tail fins, and protruding telescope eyes. The uniqueness of Balinese goldfish demonstrates strong potential for development as an export commodity because they possess different characteristics compared to other goldfish varieties. In addition, Pokdakan has continuously experienced an increase in Balinese goldfish sales. In 2019, sales peaked with revenue reaching IDR 5,000,000 per month for fish measuring 4–5 cm, and sales have continued to increase annually by approximately 10%.

II. RESEARCH METHODS

This research was conducted at Pokdakan Koiyogan Kazoku Rana, located in Bunitin Village, Bangli Regency. The location was selected purposively based on several considerations, namely that Pokdakan Koiyogan Rana is one of the active groups cultivating Balinese ornamental goldfish. The researcher also considered several additional reasons for determining this research location, including:

1. The farming business had not yet carried out cost calculations or breakdowns effectively and efficiently.
2. Marketing strategies had not been optimized.
3. Research related to this topic or location was still very limited, and no previous studies had specifically discussed it.
4.

III. RESULTS AND DISCUSSION

General Overview of Pokdakan Koiyogan Kazoku Rana

The demographic composition of Pokdakan Koiyogan Kazoku Rana includes residents of Banjar Dukuh, Bunitin Village, and surrounding areas who engage in feasible business activities according to the established business type. The management structure consists of three positions: chairman, secretary, and treasurer. The management board may be re-elected for a maximum of two terms, provided that another management board has served for at least one term beforehand.

The business operated by Pokdakan Koiyogan Kazoku Rana focuses on freshwater ornamental fish cultivation, particularly Balinese goldfish. Initially, this farming business was established because, in 2019, I Wayan Juniarta, as chairman of the Pokdakan, enjoyed keeping ornamental fish, and his child also liked purchasing ornamental fish from the market. Consequently, he started an ornamental fish cultivation business. He also had the idea to breed Balinese goldfish. Over time, he realized that ornamental fish cultivation had excellent business prospects. This motivated I Wayan Juniarta to invite several colleagues with similar interests to establish an ornamental fish cultivation organization called "Pokdakan Koiyogan Kazoku Rana," which was officially legalized on March 7, 2022, in Banjar Dukuh, Bunitin Village, Bangli District, Bangli Regency.

Fixed Costs

Fixed costs refer to costs whose amount does not depend on production volume. In this study, fixed costs are defined as equipment depreciation costs, including scoop nets of sizes 20 and 30, sorting nets, artemia and water flea nets, natural feed containers, nickel air faucet connectors, aerator hoses, circular maintenance ponds, MD 150 pumps, aerators, spawning ponds, aquariums, and broodstock.

One production season for Balinese goldfish farming at Pokdakan Koiyogan Kazoku Rana requires 3 months as the effective production period. The fixed costs per production season are described in Table 1.

Table 1. Average Fixed Costs of Balinese Goldfish Farming

Cost Type	Quantity	Unit	Price (IDR)	Depreciation Period	Total Depreciation
Aquarium (50 × 30 × 200) 8 mm thickness	10	Units	250,000	5 years	41,667
Circular spawning pond D3	2	Units	2,100,000	5 years	70,000
MD 150 Pump Capacity 3M	1	Unit	550,000	5 years	9,167
Circular post-harvest maintenance pond	6	Units	2,100,000	5 years	210,000
Aerator type ACO 003	1	Unit	450,000	5 years	7,500
Aerator hose per meter	20	Meters	1,000	3 years	556
Nickel air faucet connector branch 4	2	Units	35,000	3 years	1,944
Natural feed container	2	Units	25,000	3 years	1,389
Water flea & artemia net	1	Unit	10,000	2 years	417

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Cost Type	Quantity	Unit	Price (IDR)	Depreciation Period	Total Depreciation
Sorting net	1	Unit	10,000	2 years	417
Scoop net size 20	1	Unit	15,000	2 years	625
Scoop net size 30	1	Unit	20,000	2 years	833

Total per Month: IDR 344,514
Total per 3 Months: IDR 1,033,542
Based on Table 1, the total fixed cost of Balinese goldfish farming at Pokdakan Koiyogan Kazoku Rana amounted to IDR 1,033,542 per production season or every 3 months. The highest costs were for the D3 spawning ponds and post-harvest maintenance ponds, each valued at IDR 2,100,000.

Variable Costs
Pokdakan Koiyogan Kazoku Rana also incurs variable costs in Balinese goldfish farming activities. These include crystal salt, probiotic bacteria, methylene blue medication, broodstock, labor wages, PE packaging plastic (40 × 70 cm with 0.10 cm thickness), electricity, Saki Hikari Growth pellet feed, natural water flea feed, and tubifex worms.

Table 2. Average Variable Costs of Balinese Goldfish Farming

Cost Type	Quantity	Unit	Price (IDR)	Total
Tubifex worm feed	4	Kg	25,000	100,000
Broodstock (1 female + 1 male)	10	Fish	500,000	5,000,000
Water flea feed	2	Kg	30,000	60,000
Saki Hikari Growth pellets	4	Kg	122,000	488,000
Electricity (3 months)	3	KWH	100,000	300,000
Methblue medicine	1	Bottle	25,000	25,000
Probiotic bacteria	1	Bottle	22,500	22,500
Crystal salt	1	Kg	15,000	15,000
PE packaging plastic 40 × 70	500	Pieces	1,500	750,000
Employee salary	1	Person	500,000	500,000

Total Variable Cost: IDR 7,260,500
Based on Table 2, the average variable cost expenditure by farmers was IDR 7,260,500 per harvest every 3 months. The largest variable cost expenditure was broodstock procurement, averaging IDR 5,000,000.

Total Costs
Total cost refers to the overall expenses incurred by farmers after adding fixed costs and variable costs. The total cost of Balinese goldfish farming at Pokdakan Koiyogan Kazoku Rana is presented in Table 3.

Table 3. Average Total Costs of Balinese Goldfish Farming

No	Cost Type	Value (IDR)
1	Fixed Costs	1,033,542
2	Variable Costs	7,260,500
	Total Production Costs	8,294,042

Based on Table 3, the total cost required for Balinese goldfish farming at Pokdakan Koiyogan Kazoku Rana was IDR 8,294,042 every 3 months.

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Farm Income

Table 4. Average Farm Income of Balinese Goldfish Farming

No	Income Component	Value (IDR)
1	Revenue	15,200,000
2	Production Costs	8,294,042
	Farm Income	6,905,958

Based on Table 4, the revenue from Balinese goldfish farming at Pokdakan Koiyogan Kazoku Rana was IDR 15,200,000, while the production costs amounted to IDR 8,294,042. Thus, the total income earned per harvest period of 3 months was IDR 6,905,958.

Feasibility of Balinese Goldfish Farming

The R/C Ratio analysis was applied to evaluate the feasibility level of Balinese goldfish farming. The R/C Ratio is understood as the comparison between revenue (total income) and cost (total expenditure). Through this calculation, farmers can determine whether the farming business is economically feasible.

At Pokdakan Koiyogan Kazoku Rana, there are three grades of Balinese goldfish, each having different characteristics based on color brightness, fins, quantity, and body shape. Each grade also has different selling prices, as presented in Table 5.

Table 5. Average Grades of Balinese Goldfish

Product	Quantity	Unit Price (IDR)	Total
Grade A fry (3 months, size 6–7 cm)	50	Fish 150,000	7,500,000
Grade B fry (3 months, size 6–7 cm)	80	Fish 50,000	4,000,000
Reject grade fry (3 months, size 6–7 cm)	370	Fish 10,000	3,700,000
Total Revenue: IDR 15,200,000			

The production of Balinese goldfish farming at Pokdakan Koiyogan Kazoku Rana is expected to significantly contribute to farming profits. Moreover, the R/C Ratio calculation is intended to assess the feasibility level of this farming business for further development.

Table 6. Average Feasibility of Balinese Goldfish Farming

Revenue	Total Farming Cost	R/C Ratio
15,200,000	8,294,042	1.83

Based on Table 6, the Balinese goldfish farming business achieved an R/C Ratio value of 1.83 > 1. This means that for every IDR 1 spent, the expected revenue obtained is IDR 1.83. Financially, Balinese goldfish farming is considered feasible to operate.

Break Even Point (BEP)

The application of Break Even Point (BEP) analysis aims to determine the break-even point, namely the condition when total costs are equal to total income obtained, both in terms of product units and monetary value. In addition, BEP can indicate the number of products that need to be sold or produced, total revenue obtained, and price levels.

The BEP analysis showed that the break-even point for Balinese goldfish sales would be achieved when the price reached IDR 16,588. This result indicates that at this price, total sales revenue would be equal to the total costs incurred, including both variable and fixed costs.

IV. CONCLUSION

Based on the findings and discussion presented previously, several conclusions can be drawn:

1. **Production Costs**
   The average total farming cost was IDR 8,294,042 for one harvest period over 3 months. These costs consisted of variable costs amounting to IDR 7,260,500 and fixed costs amounting to IDR 1,033,542.
2. **Farm Income**
   Total revenue from Balinese goldfish farming reached IDR 15,200,000, resulting in a profit of IDR 6,905,958.

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3. **R/C Ratio**
   The R/C Ratio value obtained was 1.83, meaning that every IDR 1 spent generated IDR 1.83 in revenue. Therefore, this farming business is feasible to continue.
4. **Break Even Point (BEP)**
   The break-even point for Balinese goldfish sales was determined at IDR 16,588, indicating the balance point between total costs and revenue.

V. SUGGESTIONS

1. Pokdakan Koiyogan Kazoku Rana should increase the number of members cultivating Balinese goldfish.
2. Although the profits are already quite good, there is still potential to increase them further by optimizing the use of variable costs, such as finding cheaper but high-quality feed sources or implementing innovations in the cultivation system to reduce water and electricity consumption.
3. Future researchers are encouraged to further explore digital marketing strategies for Balinese goldfish products in order to provide insights into increasing sales through digital platforms and social media, as well as expanding market reach effectively.

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