International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

Cost and Benefit Analysis of Processed Fish Production in an Effort to Improve the Welfare of Fishermen's Families in Tlesah Village, Pamekasan Regency

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Abstract

This study aims to analyze the costs and benefits of fish processing businesses and their contribution to improving the welfare of fishing families in Tlesah Village, Pamekasan Regency. The study was conducted with the Barokah Putri Fishermen's Group (POKLAHSAR) in Tlesah. The method used was descriptive quantitative with a Cost Benefit Analysis (CBA) approach. Data were obtained through observation, interviews, and documentation. The results indicate that the fish processing business managed by POKLAHSAR Barokah Putri Nelayan Tlesah is feasible and profitable to develop. This is evidenced by the positive Cost Benefit Analysis (CBA) value of Rp13,064,221 and the Benefit Cost Ratio (BCR) of 2.395 (>1), indicating that the benefits outweigh the costs. In addition to providing economic benefits, fish processing businesses can increase the income of fishing families, helping to meet basic needs, education, health, and improve housing conditions. Thus, fish processing businesses are an effective alternative to improving the welfare of fishing families in Tlesah Village, Pamekasan Regency.

Keywords: Cost Benefit Analysis, fish processing business, welfare of fishermen's families

INTRODUCTION

Indonesia is an archipelagic country rich in abundant fishery resources, a crucial sector supporting the economy of coastal communities (Husen, O.O., 2024). Most coastal

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communities earn their living by managing coastal and marine resources, both directly and indirectly (Zaini, M., 2025). The fisheries sector not only provides food but also serves as the primary source of livelihood for fishing communities. However, the economic conditions of fishing families generally still face various challenges, such as uncertain catches, fluctuating fish prices, limited market access, and low added value of fishery products. These conditions contribute to unstable income levels for fishing families and impact their well-being. One effort to increase the income and well-being of fishing families is through the development of fishery processing businesses. Processing fish into various value-added products, such as smoked fish, fish floss, fish crackers, fish paste, chili sauce, and other processed products, can increase the selling price of the catch compared to selling fresh fish. In addition to extending product shelf life, fish processing activities can also open new business opportunities and create jobs for fishermen's families and the surrounding community.

The Barokah Putri Nelayan Tlesah Fish Processing and Marketing Group (POKLAHSAR) is a group of women who process fish into processed products that have a higher selling value than if they were simply sold. These women were trained in the Pamekasan Regency New Entrepreneurship Program. The birth of a new business begins with the intention or interest of these women to start a business. When someone has the intention of starting a new business, they need a supportive environment that can encourage that interest to make it a reality. As a growing business grows, problems inevitably arise related to production costs. This often arises from errors in business planning, market research errors, and even changing environmental factors, including economic, social, and even political factors, which will affect the implementation of the business. Therefore, conducting a feasibility study, especially in the financial aspect, is crucial. On the other hand, the business being carried out is already running, so the feasibility study will still provide great benefits for business development in the hope of avoiding too large a capital investment for business activities that turn out to be unfeasible or unprofitable. Feasibility is a business that is run will provide financial and non-financial benefits in accordance with their desired goals (Arnold., et al, (2020). The definition of feasibility in the assessment as a feasibility study means the possibility of a business idea that will be implemented to provide benefits, both in the sense of financial benefits and in the sense of social benefits, especially for newly developing entrepreneurs. The financial aspect is a core aspect in a business feasibility study. Discussions carried out in the financial field concern costs, working capital, operating and maintenance costs, and calculations of possible income. In this case, it is a Cost and Benefit analysis (Kasmir &

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Jakfar, 2017). Cost Benefit Analysis (CBA) is used for the process of identifying, measuring and comparing the social benefits and costs of a project or investment program in evaluating the use of scarce economic resources so that they can be used efficiently (Rahmiyati., et al, 2018). Cost and Benefit Analysis research is used to analyze whether a project or business is feasible or not based on the social welfare of the community (Suharyanti, D., 2019). A project or business is accepted if the social welfare of the community increases (social Improvement (improvement) with some people feeling better off and no one feeling worse off. In other words, welfare is achieved when the community benefits from an activity, including the Barokah Putri Nelayan Tlesah Fish Processing Group (POKLAHSAR).

Improving the welfare of fishing families is one of the important goals in coastal community development. Welfare is not only measured by the amount of income earned, but also by the family's ability to meet basic needs, finance children's education, access health services, improve housing conditions, and increase family savings and assets. Therefore, the existence of fish processing production businesses is expected to be an alternative source of income that can strengthen the economic resilience of fishing families and improve their quality of life. Based on this description, it is necessary to conduct a study entitled "Analysis of Cost and Benefit of Fish Processing Production in Efforts to Improve the Welfare of Fishing Families in Tlesah Village, Pamekasan Regency." This study is expected to provide an overview of the costs and benefits obtained from fish processing production businesses and their contribution to improving the welfare of fishing families in Tlesah Village, Pamekasan Regency.

LITERATURE REVIEW

Cost and Benefit Analysis

Cost and Benefit Analysis is a commonly used method to assess the feasibility of a project. If the benefits exceed the costs, the project is feasible to implement; conversely, if the costs exceed the benefits, the project is not feasible (Panjaitan, M.H., 2025). Cost and Benefit Analysis is used to assess whether a business is financially viable, as well as to enhance customer loyalty and reputation (Azzahro, S.M., 2025). The purpose of Cost and Benefit Analysis is to provide a rational basis for decision-making by quantifying all effects in monetary terms (Baihaqi, S.A., & Kurnia, S., 2024). In business feasibility studies, Cost and Benefit Analysis is a crucial component used to assess a business's profitability by comparing investment costs, operational costs, and economic benefits (Kasmir, 2022). With this analysis, business owners can determine whether a business

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can generate optimal profits. This analysis can also measure the efficiency of resource use within an activity. This method takes into account not only financial benefits but also the social and economic benefits received by the community (Darmawansyah et al., 2025).

Processed Fish Production

Fish processing is the activity of transforming fish catches into value-added products. Through processing, the product's economic value can be increased, its shelf life extended, and new business opportunities can be created, contributing to increased income and the welfare of fishing families (Ayuni et al., 2022). Fishery processing activities aim to improve quality, extend shelf life, and increase the economic value of fish as a fishery commodity (Swastawati & Kurniasih, 2022). Fishery product processing plays a crucial role in the development of the fisheries sector because it can reduce post-harvest losses and increase the competitiveness of fishery products. Through processing, perishable fish can be transformed into products that are more durable and have a higher sales value (Sahubawa & Ustadi, 2022). According to Andriyanto (2025), the fish processing industry is a crucial component of the downstream fisheries sector, contributing to increased added value for national fishery products. Developing the fish processing industry can increase the income of coastal communities, expand employment opportunities, and strengthen regional economic resilience based on fishery resources.

Fishermen's Family Welfare

Welfare is the condition where all life's necessities, both material and non-material, are met (Arifin, S & Soesatyo, Y., 2020). Every family desires a prosperous life, but due to certain circumstances, not all can achieve it. A family is considered prosperous if they have the opportunity to fulfill all their needs. Yahya and Pudjihardjo (2024) state that the welfare of fishing households is influenced by income, household consumption, housing conditions, access to health services, children's education, and transportation facilities. Furthermore, the use of technology also has a positive impact on the welfare of fishing families. Increasing access to technology and education can help fishermen increase business productivity, thereby improving family welfare (Sanjaya, et al., 2024). The better these indicators are, the higher the level of welfare of fishing households. The welfare of fishing families is also related to the quality of family care. Families with better economic

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conditions tend to be able to provide better access to education, health care, and basic needs for their children (Defina et al., 2023).

RESEARCH METHOD

This study uses a quantitative descriptive method to describe the conditions of the processed fish production business and analyze the costs and benefits derived from these business activities. A quantitative approach was chosen because the data analyzed are numerical, such as production costs, revenue, profits, and Cost Benefit Analysis (CBA) values. The research was conducted by the Barokah Putri Nelayan Tlesah Fish Processing and Marketing Group (POKLAHSAR). The sampling technique used in this study was saturated sampling, which is a sampling technique that uses all members of the population as research samples. This sampling technique is used when the population is relatively small or the researcher wants to make generalizations with a very low error rate (Sugiyono, 2023). The study population was all processed fish production businesses within the Barokah Putri Nelayan Tlesah Fish Processing and Marketing Group (POKLAHSAR). The data used in the study consisted of primary and secondary data. Primary data was obtained through interviews, observations, and documentation of business owners, which included information on fixed costs, variable costs, production volume, product selling price, and business revenue. Meanwhile, secondary data was obtained from various sources, such as books, scientific journals, data from the Central Statistics Agency (BPS), and village government documents relevant to the research. Data collection techniques used include observation, interviews, documentation, and literature studies to support the completeness of research data. Data Analysis Techniques, namely Production Cost Analysis, are used to describe all expenses incurred in fish processing production activities. Production costs consist of fixed costs and variable costs. Fixed costs include costs that do not change even though the amount of production changes, while variable costs are costs that change according to the amount of production produced (Suratiyah, 2020). Total production costs are calculated using the formula: TC (Total COST) = TFC (Total fixed cost) + TVC (Total variable cost). Revenue Analysis Revenue is calculated using the formula: TR (Total Revenue) = P (Selling Price) x Q (Number of Products) Profit Analysis Profit is calculated using the formula: Π (Profit) = TR (Total Revenue) - TC = Total Cost. Cost Benefit Analysis (CBA) Cost Benefit Analysis is used to determine the feasibility of a business based on the benefits and costs obtained during the business period. The formula used is: $\mathrm{CBA} = \sum_{t=1}^{n} \frac{(Bt-Ct)}{(1+r)^t}$, Bt =

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Benefit in period t, Ct = Cost in period t, r = Interest rate (discount rate), t = Time period and n = Age of analysis. The criteria are if CBA > 0 → the business is feasible and profitable, if CBA = 0 → the business is break-even and If CBA < 0 → the business is not feasible.

RESULTS AND DISCUSSION

POKLAHSAR BAROKAH PUTRI NELAYAN TLESAH

POKLAHSAR Barokah Putri Nelayan Tlesah or Processing and Marketing Group (POKLAHSAR) is a community group of coastal young women and mothers (wives of fishermen) who have participated in fish processing training under the Pamekasan Regency New Entrepreneurship (WUB) program. The mothers collaborate in developing new entrepreneurship in Pamekasan Regency, one of which is fish processing training. The POKLAHSAR "Barokah Putri Nelayan Tlesah" Fish Processing Business Group not only processes fish but also markets their processed fish. Using a capital pooling system and agreed-upon calculations, they produce processed fish products as a group and sell them using simple marketing methods. This business group is primarily comprised of coastal women who are also fishermen's wives, who generally play dual roles: working at home and selling their husbands' catches (in nearby villages or even in urban areas). However, with the "Barokah Putri Nelayan Tlesah" group, they process their husbands' catches into processed fish that can be made into traditional dishes with a higher selling value. After producing the processed fish, they package and market it to various shops and the community around Pamekasan.

PROCESSED FISH PRODUCTION COST ANALYSIS

Production cost analysis was conducted to determine the costs involved in processing fish into a product ready for sale. Production costs consist of fixed costs and variable costs.

1. Fixed Costs

Fixed costs are costs that remain constant despite changes in production volume. Fixed costs at the Barokah Putri Nelayan Tlesah Group include depreciation of equipment, such as frying pans, stir-fries, stoves, LPG gas stoves, blenders, basins, knives, and other supporting equipment. Fixed costs are described in Table 1:

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Table 1: Fixed Costs of the Barokah Putri Nelayan Tlesah Group

No	Tool Name	Quantity	Price	Total Price
1	Frying Pan	1	Rp 70.000	Rp 70.000
2	Spoon	1	Rp 15.000	Rp 15.000
3	Stove	1	Rp 300.000	Rp 300.000
4	LPG Gas Tank	1	Rp 17.000	Rp 17.000
5	Basin	1	Rp 20.000	Rp 20.000
6	Knife	1	Rp 35.000	Rp 35.000
7	Blender	1	Rp 700.000	Rp 700.000
Total Number				**Rp 1.157.000**

2. Variable Costs

Variable costs are costs that change depending on production volume. The components of variable costs are explained in Table 2:

Table 2: Variable Costs of the Barokah Putri Nelayan Tlesah Group

No	Tool Name	Quantity	Price	Total Price
1	Tuna	10	Rp 20.000	Rp 200.000
2	Cooking Oil	2	Rp 22.000	Rp 44.000
3	Salt	1	Rp 1.000	Rp 1.000
4	Chili Peppers	2	Rp 27.000	Rp 54.000
5	Shallots	500grm	Rp 16.000	Rp 16.000
6	Garlic	40 grm	Rp 10.000	Rp 10.000
7	Shrimp Paste	2	Rp 5.000	Rp 10.000
8	Flavoring	1	Rp 10.000	Rp 10.000
9	Tomatoes	1,5	Rp 12.000	Rp 12.000
Total Number				**Rp 357.000**

3. Total Production Cost

Total production costs are obtained by adding fixed costs and variable costs:

TC = TFC + TVC
TC = Rp 1,157,000 + Rp 357,000
TC = Rp 1,514,000 (in 1 Month)

TC = TFC + TVC
TC = Rp 1,157,000 + Rp 4,284,000
TC = Rp 5,441,000 (in 1 year)

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Description:

TC = Total Cost
TFC = Total Fixed Cost
TVC = Total Variable Cost

The calculation results show that fish processing businesses require relatively affordable production costs and can still generate profits if the product is marketed at an appropriate price.

INCOME AND PROFIT

Income and profit analysis is conducted to determine the economic benefits obtained by fishing families from fish processing activities. Income is the value of receipts obtained from product sales, while profit is the difference between total revenue and total production costs incurred during the business process (Nurawaliah, S, 2020). Increased income and profits from fish processing businesses impact the welfare of fishing families. The additional income earned can be used to meet basic family needs, children's education and health costs, housing improvements, and other social needs (Mawardi et al., 2022). Furthermore, fish processing businesses can also create employment opportunities for family members, thereby increasing the economic productivity of fishing households. Higher profits, the greater the family's ability to improve its quality of life and well-being. Increased income has been shown to have a positive relationship with the welfare of fishing families (Mustaruddin et al., 2023). To determine revenue and profit, we must determine the values of P (Price) and Q (Number of Products) as follows:

1. Number of Products (Q)

The products sampled in this study are squid chili sauce, tuna chili sauce, and anchovy chili sauce, which are the flagship products of the POKLAHSAR Barokah Putri Nelayan Tlesah fish processing business, as described in Figure 1:

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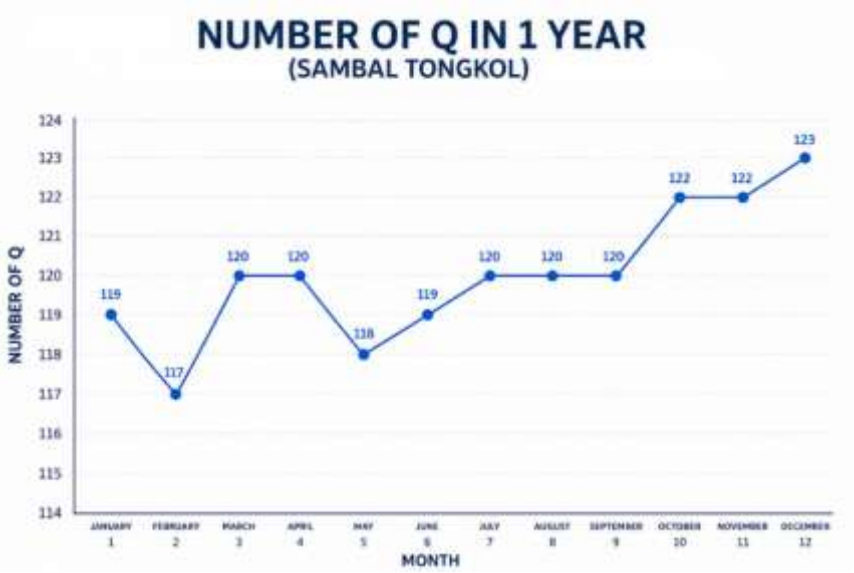


Figure 1: Number of Products (Q)

Figure 1 shows that the number of units (Q) experienced an increasing trend over the course of one year, from 119 units in January to 123 units in December, with an average production of around 120 units per month. This increase in production indicates that the fish processing business is developing well and has the potential to contribute to increasing the income and welfare of fishing families in Tlesah Village, Pamekasan Regency. The number of products sold in one year was 1,440 units, with an average of 120 units per month, so Q = 120 units.

2. Price (P)

P is the selling price of a product. Formula:

$$\text{P (Price)} = \frac{\text{Total Sales Value}}{\text{Number of Product Sold}}$$

*Total Sales Value = Number of Products Sold x Product Price = 120 x Rp. 20.000
= Rp. 2.400.000

$$\text{P (Price)} = \frac{\text{Rp. 2.400.000}}{120} = \text{Rp. 20.000}$$

3. Total Revenue (TR)

Total Revenue (TR) or total receipts are all income earned from the sale of processed fish products during a specific period. (Putri, S. M, et al., 2024). In a Cost and

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Benefit (CBA) analysis, total receipts are used to determine the economic benefits derived from fish processing business activities.

TR = P x Q in 1 Month	TR = P x Q in 1 year
TR = Rp. 20,000 x 120	TR = Rp. 20,000 x 1440
TR = Rp. 2,400,000 /1 month	TR = Rp. 28.800.000/1 year

Based on the calculation above, the Total Revenue (TR) of POKLAHSAR Barokah Putri Nelayan Tlesah fish processing business is IDR 2,400,000 per month and IDR 28,800,000 per year. This Total Revenue (TR) shows the magnitude of the economic benefits obtained from the fish processing business. The higher the number of products sold and the selling price applied, the greater the total revenue obtained. An increase in total revenue will have an impact on increasing business profits after deducting production costs.

4. Profit

Profit is the difference between total revenue (TR) and total production costs (TC) incurred in the business process (Achila, P. D. A., & Astawinetu, E. D., 2024). In Cost and Benefit Analysis (CBA), profit is the primary indicator for determining the economic benefits obtained by business actors from processed fish production activities.

Π = TR – TC (in 1 month)	Π = TR – TC (1 year)
Π = Rp. 2.400.000 – Rp 1.514.000	Π = Rp. 28.800.000– Rp 5.441.000
Π = Rp. 886.000/1 month	Π = Rp. 23.359.000/1 Year

Based on the calculation results above, the total profit of the Barokah Putri Nelayan Tlesah fish processing group in one month is IDR 2,400,000 and in one year IDR 23,359,000. This shows that fishery product processing activities can provide added value compared to just selling fresh fish. The greater the difference between revenue and production costs, the greater the economic benefits received by fishing families. Increased profits can improve the ability of fishing families to meet household needs, finance children's education, meet health needs, increase business capital, and increase family savings. Therefore, the profit from fish processing businesses is an important indicator in measuring the improvement in the welfare of fishing families in Tlesah Village, Pamekasan Regency.

COST BENEFIT ANALYSIS (CBA)

The Cost Benefit Analysis calculation is performed by comparing the benefits obtained from the processed fish production business with the monthly costs, then discounting them using an interest rate of 12%. The calculation results show that the

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monthly benefits received are Rp 2,400,000 greater than the costs incurred. The CBA equation is $\text{CBA} = \sum_{t=1}^{n} \frac{(Bt-Ct)}{(1+r)^t}$. The results of the Cost Benefit Analysis calculation are as described in Table 3:

Table 3: Cost Benefit Analysis Calculation

No	Benefit /Month to-n	Cost/Month to-n	Interest Rate bunga$(1+r)^{tn}$	CBA
1	Rp 2.400.000	Rp 1.514.000	$(1 + 0,12)^0$	Rp 886.000
2	Rp 2.400.000	Rp 354.000	$(1 + 0,12)^1$	Rp 1.826.786
3	Rp 2.400.000	Rp 354.000	$(1 + 0,12)^2$	Rp 1.631.059
4	Rp 2.400.000	Rp 354.000	$(1 + 0,12)^3$	Rp 1.456.302
5	Rp 2.400.000	Rp 354.000	$(1 + 0,12)^4$	Rp 1.300.270
6	Rp 2.400.000	Rp 354.000	$(1 + 0,12)^5$	Rp 1.160.955
7	Rp 2.400.000	Rp 354.000	(1 + 0,12)6	Rp 1.036.567
8	Rp 2.400.000	Rp 354.000	(1 + 0,12)7	Rp 925.506
9	Rp 2.400.000	Rp 354.000	(1 + 0,12)8	Rp 826.345
10	Rp 2.400.000	Rp 354.000	(1 + 0,12)9	Rp 737.808
11	Rp 2.400.000	Rp 354.000	(1 + 0,12)10	Rp 658.757
12	Rp 2.400.000	Rp 354.000	(1 + 0,12)11	Rp 588.176
Jumlah				**Rp13.034.532**

Based on the Cost Benefit Analysis (CBA) calculation in the table, the total CBA value was obtained at Rp 13,064,221 during the 12-month analysis period with an interest rate (discount rate) of 12%. Based on the analysis results, the CBA value was obtained at Rp 13,064,221. This value is positive (CBA > 0), which indicates that the benefits obtained during the business period are greater than the costs incurred. Thus, the processed fish production business provides economic benefits and is feasible to run. A positive CBA value indicates that the processed fish production activity is able to produce quite good added value. In addition to providing benefits for business actors, this activity also has the potential to increase the income of fishermen's households by utilizing fish catches into products with higher selling value. Economically, the results of this analysis indicate that the investment and operational costs incurred by the POKLAHSAR Processed fish Barokah Putri Nelayan Tlesah in the fish processing business can still be covered by the benefits obtained. Therefore, the processed fish production business in

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Tlesah Village, Pamekasan Regency can be categorized as a feasible and profitable business to be developed as an effort to improve the welfare of fishing families in Tlesah Village, Tlanakan District, Pamekasan Regency.

The Benefit Cost Ratio (BCR) is an analytical method used to compare the benefits gained with the costs incurred in a business or project. The BCR is used to determine the feasibility of a business and assess whether the benefits gained outweigh the costs. (Pannell, D.J., et al., 2024). The results of the Benefit Cost Ratio (BCR) calculation are as follows:

$$\text{BCR} = \frac{\text{Total Binefit}}{\text{Total Cost}} = \frac{\text{Rp. 13.034.532}}{\text{Rp 5.441.000}} = 2{,}395$$

Criteria:

BCR > 1 → The business is feasible and profitable because the net benefits outweigh the costs.

BCR = 1 → The business is at break-even.

BCR < 1 → The business is not feasible because the costs outweigh the benefits.

From the calculation of Benefit Cost Ratio (BCR), the result is 2.395 BCR> 1. This means that the POKLAHSAR Processed Fish of Barokah Putri Nelayan Tlesah is a feasible business and the net benefits are greater than the costs incurred. The high BCR value indicates that the fish processing business activity is able to provide good economic benefits for business actors. This condition reflects that the management of production costs has been carried out efficiently so as to produce greater benefits. Therefore, the POKLAHSAR Barokah Putri Nelayan Tlesah fish processing business has good prospects to continue to be developed as an effort to increase the income and welfare of fishermen's families in Tlesah Village, Pamekasan Regency.

Improving the Welfare of Fishing Families through the Development of Fish Processing Businesses

Fishing families in Tleasah Village who are developing fish processing businesses are members of the "Barokah Putri Nelayan Tlesah" Processing and Marketing Group (POKLAHSAR). This group is diversifying its products through the innovative processing of skipjack tuna into skipjack tuna sambal (chili sauce). This innovation aims to increase the economic value of the fish caught, reduce the risk of losses due to unsold fish, and open new business opportunities for coastal communities. Furthermore, skipjack tuna sambal has broader market potential due to its practicality, distinctive flavor, and

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marketability as a regional flagship product. This activity contributes to increasing the income of fishing households, expanding employment opportunities for family members, particularly fisherwomen, and reducing economic dependence on seasonal and fluctuating catches. Thus, developing fish processing businesses is an effective economic empowerment tool to support the sustainable improvement of fishing families' welfare (Fanani M.Z., et al., 2025).

From the perspective of the welfare of fishing families, the success of a processed fish production business is reflected not only in increased income but also in the family's ability to meet daily living needs (Widiya, W., et al., 2025). The additional income earned from fish processing activities can be used to meet basic family needs, such as food, clothing, and shelter. Furthermore, higher incomes provide greater opportunities for fishing families to finance their children's education, meet health needs, and improve the quality of their housing. Fish processing businesses also serve as an alternative source of income for fishing families. Fishermen's incomes are currently heavily influenced by the season, weather conditions, and the uncertainty of the catch. With fish processing activities, fishing families gain a more stable source of income because their catch can be processed into value-added products and marketed more widely. This helps reduce fishing families' dependence on income from fishing alone.

In addition to increasing income, processed fish production businesses also create employment opportunities for family members, especially fisherwomen. The involvement of family members in the production, packaging, and marketing of products can increase household economic productivity. Thus, the family's economic contribution comes not only from the head of the family as a fisherman, but also from other family members involved in the fish processing business. This increase in income and employment opportunities ultimately impacts the welfare of fishing families. Families are better able to meet basic needs, increase access to education and health services, and have the ability to save or invest in business. Therefore, the processed fish production business developed by POKLAHSAR Barokah Putri Nelayan Tlesah not only provides economic benefits in the form of business profits, but also contributes to improving the social and economic welfare of fishing families in Tlesah Village, Pamekasan Regency. Thus, the results of the Cost and Benefit analysis indicate that developing a processed fish production business is an effective strategy in improving the welfare of fishing families through increased income, family job creation, strengthening household economic resilience, and improving the quality of life of coastal communities in a sustainable manner.

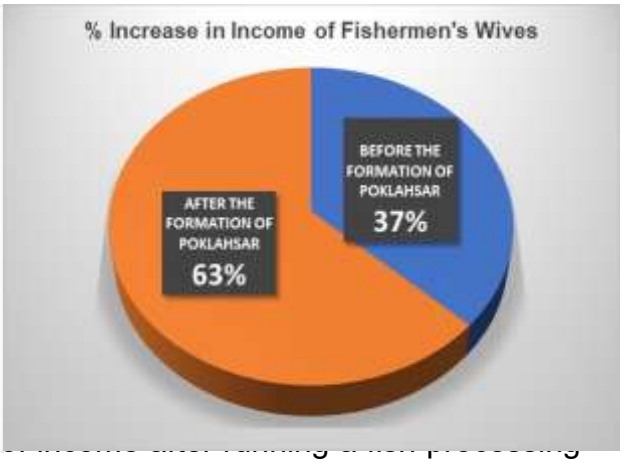
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1. Fishermen's Family Income

The main indicator of well-being is the increase in household income after operating a fish processing business. Based on detailed interviews with fishermen's wives, the income is as follows:





business reached approximately 63% of the total income analyzed, while income before the business was only around 37%. This illustrates a significant increase in income after fishing families developed fish processing businesses. This increase in income indicates that the fish processing business has a positive impact on the economic conditions of fishing families. The additional income earned by fishermen's wives helps increase overall household income. This increase in added value has implications for increasing household income and strengthening family economic resilience (Oktavia, A., & Hidayat, M., 2023). Fishery processing businesses significantly contribute to increasing the income of fishing families and have a positive impact on household economic well-being (Oppier, H., et al., 2024). Therefore, the 63% increase in income contribution after running a fish processing business indicates that this activity plays a significant role in improving the welfare of fishing families, enabling families to better meet basic needs such as food, clothing, and shelter, and providing opportunities to improve their quality of life and family well-being.

2. Fulfillment of Basic Needs

Based on interviews with the families of fishermen who participated in the study, developing a fish processing business has had a positive impact on the family's ability to meet basic daily needs. The basic needs analyzed included food, clothing, and housing. Most respondents stated that the additional income from the fish processing business

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helped improve their family's economic situation compared to before starting the business. Interviews indicated that before starting the fish processing business, some families still experienced difficulties in meeting their food needs optimally, especially when fish catches decreased due to bad weather or the lean season. After gaining additional income from the fish processing business, most respondents reported that it became easier to meet their daily food needs. They were able to provide a more diverse diet, improve the quality of family consumption, and purchase basic necessities more regularly. This indicates that the fish processing business contributes to improving the food security of fishing families. Business diversification through fish processing can improve the food security of fishing households due to increased and more stable incomes (Mutmainnah et al., 2023). Thus, the fish processing business not only provides added economic value but also improves the family's ability to meet their daily food needs. Fulfillment of Clothing Needs Based on the interview results, the family's ability to meet clothing needs also increased. After the fish processing business developed and provided additional income, the family began to have the ability to buy clothes for family members more regularly. Fulfillment of Housing Needs (Housing) The interview results showed that the increase in income from the fish processing business also helped the family in improving the condition of their residence. Several respondents stated that the additional income was used to repair damaged roofs, paint the house, repair floors, and add household facilities that support family comfort. Increased income from productive household businesses has a positive effect on family purchasing power, including in fulfilling the needs of clothing, food and other equipment. Therefore, additional income from the fish processing business has helped fishing families meet their needs better than before running the business (Paramita, B. et al., 2025).

3. Education and Health of Fishing Families

According to interviews with fishing families, increased income from fish processing businesses has had a positive impact on the education and health (nutritional) of family members. Before starting a fish processing business, some families experienced difficulties covering their children's education costs, particularly for school supplies, uniforms, textbooks, and nutritional and medical needs. Uncertain income from fishing often hindered optimal educational and health needs. After earning additional income from their fish processing businesses, most respondents reported being better able to pay their children's school fees on time and even send their children to favorite schools, even international schools. Families with higher incomes tend to allocate greater

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resources to the education and health of their family members. Research shows that increased household income positively impacts children's access to education and the quality of family health because families have better ability to cover school fees, nutrition, and health services (Wijaya, S.T. et al., 2023). This indicates that fish processing businesses contribute to improving access to education and the nutritional and health needs of fishing families.

CONCLUSION

The results of the study indicate that the total production cost of the fish processing business is IDR 5,441,000 per year, while total revenue reaches IDR 28,800,000 per year, with a profit of IDR 23,359,000 per year. The Cost Benefit Analysis (CBA) value is IDR 13,064,221 and the Benefit Cost Ratio (BCR) is 2.395 (>1), indicating that the fish processing business is feasible and profitable. These results indicate that the economic benefits obtained outweigh the costs incurred, thus making the business potentially increase the income and welfare of fishing families. In addition to providing economic benefits, the fish processing business can also improve the welfare of fishing families. Increased income from this business helps families meet basic needs (food, clothing, and shelter), finance children's education, improve nutritional and health needs, and improve housing conditions. Therefore, developing a fish processing business is an effective strategy for increasing income, strengthening household economic resilience, and improving the welfare of fishing families in Tlesah Village, Pamekasan Regency.

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