Journal of Multidisciplinary Academic Business Studies (JoMABS)
ISSN 3032-3169, Vol 2, No 4, 2025, 567-587 https://doi.org/10.35912/jomabs.v2i4.3404

Analysis of demand elasticity for processed salted fish at Maria Bintang Laut Cooperative, Diocese of Mimika, in Mimika Regency

Dince Dina Lakupais[1], Mesak Iek[2], Risky Novan Ngutra[3]
Universitas Cenderawasih, Jayapura, Papua, Indonesia[1,2,3]
waramoridina@gmail.com[1]

Article History
Received on 3 July 2025
1st Revision on 24 July 2025
Accepted on 10 August 2025

Abstract
Purpose: This study aims to analyze the cost structure, revenue, income, break-even point (BEP), and demand elasticity for processed salted fish at the Maria Bintang Laut Cooperative, Diocese of Mimika, to assess business feasibility and provide strategic recommendations for income improvement.
Research/methodology: The research employs a quantitative approach with a census of 60 active cooperative members out of 230 total artisans. Primary data were collected through structured interviews and field observations, while secondary data were sourced from cooperative records and government publications. Data analysis techniques include descriptive statistics, demand elasticity measurement, log-linear regression, and BEP analysis.
Results: Findings indicate an increase in production from 986 kg in 2023 to 1,431 kg in 2024, alongside higher revenues (from IDR 19.72 million to IDR 35.7 million). However, despite rising revenues, the cooperative failed to reach BEP due to high production costs, especially labor and raw materials, resulting in losses in both years. The price elasticity of demand was calculated at 1.8, suggesting that demand is highly elastic, with higher prices followed by higher demand contrary to conventional economic theory but consistent with local market dynamics.
Conclusions: Although production and revenue increased, the business remains unprofitable. Demand elasticity analysis suggests consumers are responsive to perceived quality, making pricing strategy crucial. Efficiency improvements in labor and raw materials are necessary to achieve BEP and profitability.
Limitations: The study is limited by a small dataset (2023–2024), restricting statistical generalization.
Contribution: This study provides practical insights for cooperatives in coastal communities to design cost efficiency, adaptive pricing, and quality-based strategies to strengthen economic sustainability.

Keywords: *Break-Even Point, Cooperative, Income, Price Elasticity of Demand, Pricing, Salted Fish*

How to Cite: Lakupais, D. D., Iek, M., & Ngutra, R. N. (2025). Analysis of demand elasticity for processed salted fish at Maria Bintang Laut Cooperative, Diocese of Mimika, in Mimika Regency. *Journal of Multidisciplinary Academic Business Studies*, 2(4), 567-587.

1. Introduction

Indonesia is known as a maritime country because its marine territory covers more than 74% of the total area of the country (Febiana & Burhanuddin, 2024). Indonesia's marine wealth is abundant and serves as a major economic resource for communities, especially those living in coastal areas. Many people rely on the marine and fisheries sector for their livelihoods, either as fishermen or as processors of marine products. The utilization of marine products is not limited to personal consumption but also

extends to economic activities, such as selling in local markets or exporting. The fisheries sector plays a significant role in supporting Indonesia's Gross Domestic Product (GDP), reflecting its contribution to national economic growth (Alwasifah & Rahayu, 2022). In this context, fish processing has become a growing business alternative in various regions, including Mimika Regency.

Salted fish processing cooperatives serve as economic institutions that can organize community production activities while increasing the added value of local products. However, in practice, these cooperatives face challenges such as fluctuations in raw material prices, unstable demand, and variable production costs. Therefore, understanding demand elasticity is important for formulating marketing strategies and business management. Elasticity analysis not only helps to understand consumer sensitivity to price changes but also provides a basis for more appropriate pricing policies that can improve artisans' income.

Salted fish processing businesses are often dependent on sufficient raw material availability and natural factors (e.g., sunlight). These challenges encourage salted fish entrepreneurs to focus on efficiency. This situation also motivates them to evaluate internal business management, including financial records (profit, gross revenue, and production costs), enabling the formulation of optimal efficiency strategies. Fish processing exists in various forms, from traditional products such as salted and smoked fish to modern products such as canned fish and irradiated fish. The purposes of processing include (1) preserving the fish, (2) converting raw materials into consumer-preferred products, (3) maintaining fish quality, (4) ensuring consumer safety from processed fish consumption, and (5) maximizing the utilization of raw materials.

All forms of processing aim to make products more acceptable to consumers or to expand the consumer base across various ethnic, religious, and social groups. Processing also aims to extend shelf life to several months. However, it should be noted that processing cannot improve product quality. Poor-quality raw materials will result in poor-quality products. Fish must be harvested at peak quality, and throughout the supply chain from harvest to consumer quality must be maintained as much as possible. Failure to protect fish quality at any point in the chain may lead to low-quality products (Iriyanto & Giyatmi, 2015).

A common type of fish processing is salted fish. The process starts with gutting, washing, followed by salting and drying. Differences in processing can be seen in gutting (either splitting the fish or leaving it whole) and in salting, such as the amount of salt used, salting duration, and drying method. These variations are due to differences in fish type and size, subsequent processing methods, and the desired level of saltiness (Marpaung, 2015). Processing is related to efforts to increase production and the added value of a commodity. If the added value increases, the commodity price also rises. The capture fisheries industry and fish processing industry are central to the fisheries industry cluster because both involve material flow (Tetrick, Fisher, Ford, & Quick) and value addition processes (Purwaningsih, 2015). Fish is a nutritious food source with many benefits but also has some disadvantages.

Fish is highly perishable if not immediately processed. Koperasi Maria Bintang Laut Keuskupan Timika plays a strategic role in supporting the development of coastal community economies in Timika. This area has great potential in the fisheries sector, with abundant marine catches. As a producer of salted fish, Timika is known for the quality of its products, offering strong opportunities to compete in local and national markets. According to preliminary data, there are 230 fishermen, with around 60 active fishermen currently relying on fish catches as their main source of income. Most fishermen sell their catch to salted fish artisans affiliated with the cooperative. The cooperative's salted fish production averages 82 to 12 kilograms per month or about 1 to 1,431 tons per year, with selling prices ranging from IDR 80,000 to IDR 100,000 per kilogram. Price variations are influenced by product quality, fishing season, and market demand conditions.

Nevertheless, artisans face several challenges in maintaining their income. A major challenge is fluctuations in salted fish prices, often influenced by price elasticity of demand and supply. When prices

rise significantly, demand tends to decrease, affecting sales volume and artisan income. Conversely, when prices fall too low, artisans struggle to cover production costs, such as raw material procurement, salting, and drying. Limited market access and competition from similar products from other regions also hinder artisans from increasing income. This highlights the need for better production and marketing management strategies, as well as improved operational efficiency at both the artisan and cooperative levels. Income-wise, artisans earn an average of IDR 2,000,000 to IDR 4,100,000 per month after operational costs. However, income strongly depends on production volume, salted fish quality, and pricing strategies. Thus, understanding the impact of price elasticity of demand and supply on artisan income is crucial.

Previous studies show that the price elasticity of demand and supply for salted fish is influenced by several factors. A study by Chaerani (2017) in Bauntung Market, Banjarbaru, South Kalimantan, found that demand for certain fish is inelastic, meaning price changes do not significantly affect demand. Meanwhile, research in Padang City identified that price, consumer preferences, and income together significantly affect demand for salted fish. In the context of microenterprises and fisheries processing cooperatives, understanding consumer behavior is critical, particularly in how consumers respond to price changes. The concept of price elasticity of demand helps analyze consumer sensitivity to changes in product prices. According to Mankiw (2018), price elasticity of demand measures how much the quantity demanded changes when the price of a good changes. This elasticity value provides important guidance for formulating appropriate pricing policies without drastically reducing demand.

For salted fish, a widely consumed product, elasticity values can serve as a benchmark for marketing and distribution strategies. Sadoulet and de Janvry (1995) explain that elasticity is used to evaluate pricing policies and their impact on producer and consumer welfare. Therefore, analyzing the demand elasticity of salted fish in Koperasi Maria Bintang Laut provides important contributions not only for cooperative efficiency but also for local economic resilience. This study aims to analyze the income levels of salted fish artisans in the cooperative while identifying factors influencing the price elasticity of demand and supply. The results are expected to provide practical recommendations for the cooperative to increase artisan income, expand market access, and mitigate risks from price fluctuations.

1.1 Research Questions

Based on the background above, this study formulates the following research questions:

1. What are the costs, revenue, income, and Break-Even Point (BEP) in the salted fish processing business at Koperasi Maria Bintang Laut, Timika Diocese, Mimika Regency?
2. What is the demand elasticity of salted fish in the business at Koperasi Maria Bintang Laut, Timika Diocese, Mimika Regency?
3. What is the price elasticity of demand for salted fish at Koperasi Maria Bintang Laut?

2. Literature review

2.1 Cost

In economic activities, cost is defined as a sacrifice in the form of money made to obtain goods or services expected to provide benefits, either immediately or in the future. In the production process, cost includes all company expenditures to acquire raw materials and other production factors necessary to produce output. Broadly, business costs can be grouped into several categories:

a) Based on the Purpose of Expenditure
   There are costs that arise before operational activities begin, such as feasibility study costs (sunk cost), as well as opportunity costs that occur when choosing one alternative use of funds over another.
b) Based on Operational Activities
   Costs in this category are divided into operational costs, such as administration and sales, and non-operational costs, such as asset and building depreciation.
c) Related to Products
   There are costs directly related to the production process, such as raw materials and labor, as well as indirect costs, such as administration and marketing.

d) Related to Marketing Activities
   These costs include promotional expenses and sales activities that support product distribution.
e) Based on Production Volume
   Fixed costs are costs that do not change even if production volume increases or decreases, such as fixed employee salaries and taxes. Meanwhile, variable costs change depending on the quantity of products produced, for example, raw material costs and daily labor costs.

In the context of the salted fish processing business, a comprehensive understanding of this cost structure is crucial for planning production efficiency and developing appropriate pricing strategies to ensure business sustainability.

1) Fixed Costs

Fixed costs are defined as costs whose magnitude is not influenced by the level of production (Mubyarto, 1989:72). Examples include salaries for permanent staff, depreciation of equipment, machinery, office, warehouse, and land and building taxes. Characteristics of fixed costs include: the total remains constant at every production volume, cost per unit tends to be stable with changes in production volume, control is the responsibility of certain management levels, and cost recognition is based on management policies and allocation methods.

2) Variable Costs

Other costs aside from fixed costs generally fall under variable costs, which vary depending on production levels (Mubyarto, 1989:72). In some cases, taxes can also be categorized as variable costs if they are determined as a percentage of net production output; similarly, in the long term, land acquisition may be included as a variable cost due to increases in land value. Examples of variable costs include sales costs, raw material costs, etc. Characteristics of variable costs include: total costs change according to production volume, controllable by lower management levels (since production is managed by lower management), cost per unit tends to remain stable, traceable to all produced products, and direct labor costs and direct raw material costs are included as variable costs.

Business costs are differentiated into fixed asset investments, operational costs, and depreciation costs. Fixed asset investment covers all costs for long-term assets, including infrastructure for the business. Operational costs include fixed and variable production costs, while depreciation costs account for the reduction in value of fixed assets that cannot be reused due to wear and tear. Depreciation is calculated annually over the economic life of the asset. Depreciation refers to the systematic and periodic allocation of the acquisition cost of an asset over different periods of its use (Hery, 2015:190). Depreciation expense can be calculated by subtracting the estimated residual value from the acquisition cost and dividing it by the estimated useful life (Hery, 2015:195). Mathematically, this can be expressed as:

$$\textbf{Depreciation} = \frac{\textbf{Acquisition Value} - \textbf{Estimated Residual Value}}{\textbf{Estimated Useful Life}}$$

According to Soekartawi (2016:57), total cost can be calculated by summing fixed costs and non-fixed costs (variable costs), which can be written as:

$$\mathbf{TC = FC + VC}$$

Where:
TC (*Total Cost*) = Total production cost
FC (*Fixed Cost*) = Production fixed cost
VC (*Variable Cost*) = Production variable cost.

2.2 Revenue and Profit

In running a business, it is important to understand the concepts of revenue and profit thoroughly. Gross revenue or total revenue reflects all income generated from sales activities, whether goods or services, over a specific period. This value is usually calculated based on the number of products sold multiplied by the unit price. Net revenue, often referred to as business profit, is obtained after subtracting all

operational costs from total revenue. Therefore, the difference between revenue and total cost indicates whether a business is operating efficiently and profitably. The simple formulas often used are:

- **Total Revenue (TR)=Price×Quantity**
- **Profit (π)=Total Revenue–Total Cost**

Analyzing these two elements is crucial as it helps entrepreneurs determine whether the production and pricing strategies are appropriate. For a salted fish processing cooperative, this understanding forms the basis for making rational business decisions oriented toward business sustainability.

2.3 Price Elasticity of Demand and Supply

In economics, price elasticity of demand refers to the extent to which the quantity demanded by consumers changes in response to price changes. If price changes cause significant changes in the quantity demanded, demand is considered elastic. Conversely, if quantity demanded changes only slightly despite price changes, demand is considered inelastic. Meanwhile, price elasticity of supply measures the producer's ability to adjust the quantity of goods offered when prices change. Elastic supply indicates that producers can easily increase or decrease production, while inelastic supply indicates limitations in responding to price changes, usually due to technological or resource constraints.

1) Price Elasticity of Demand

This elasticity is calculated by comparing the percentage change in the quantity demanded to the percentage change in price. The formula is:

$$\mathbf{Ep = (\%\ change\ in\ Q) / (\%\ change\ in\ P)}$$

In mathematical notation, elasticity can also be written as:

$$\mathbf{Ep = (P \times \Delta Q) / (Q \times \Delta P)}$$

The elasticity value helps assess the sensitivity of consumers to price changes. The elasticity coefficient can be classified as follows:

- **Ep = 0**: Perfectly inelastic demand (unresponsive to price).
- **0 < Ep < 1**: Inelastic demand (limited responsiveness).
- **Ep = 1**: Unit elastic demand (price and quantity changes are proportional).
- **Ep > 1**: Elastic demand (highly responsive to price changes).
- **Ep** ∞: Perfectly elastic demand (any price change affects total demand).

2) Income Elasticity of Demand

This type of elasticity measures changes in demand due to changes in consumer income. The basic formula is:

$$\mathbf{EI = (\%\ change\ in\ Q) / (\%\ change\ in\ I)}$$

Interpretation:

- **EI < 0**: Demand decreases as income rises → inferior goods.
- **0 < EI < 1**: Basic necessity goods (normal necessity).
- **EI > 1**: Luxury goods.
- **EI = 0**: No change in demand despite income increase.

Understanding this type of elasticity is important for designing marketing strategies and market segmentation. For example, salted fish can be classified as a necessity if demand remains stable even with changes in consumer income:

$$\mathbf{EI = (\%\ change\ in\ Q) / (\%\ change\ in\ I)}$$

Interpretation:

- EI < 0: Demand decreases as income rises → inferior goods.
- 0 < EI < 1: Basic necessity goods (normal necessity).

- EI > 1: Luxury goods.
- EI = 0: No change in demand despite an increase in income.

Understanding this type of elasticity is important for designing marketing strategies and market segmentation. For example, salted fish can be classified as a necessity good if its demand remains stable despite changes in consumer income. Income demand elasticity measures how much the demand for a good changes when consumer income changes. This concept is important to understand the type of goods based on consumer responses to increases or decreases in their purchasing power. According to Mankiw (2018), income elasticity is calculated using the following formula:

$$E_I = \frac{\%\ \textit{change in quantity demanded}}{\%\ \textit{change in income}}$$

Interpretation:

- **E_I > 1** → luxury goods, demand increases faster than income.
- **0 < E_I < 1** → normal goods (necessities), demand rises but not sharply.
- **E_I < 0** → inferior goods, demand decreases when income rises.

In the local context, salted fish is generally categorized as a normal good because it is consumed by people across various income levels. However, among higher-income groups, consumption of salted fish may decrease in favor of other protein sources considered more prestigious, such as fresh fish, chicken, or imported products. Conversely, when income decreases, consumption of salted fish may increase because it is more affordable than other options. This phenomenon is also reflected in research at the Maria Bintang Laut Cooperative in Timika, where demand for salted fish remained stable despite fluctuations in community purchasing power. This shows that salted fish is moderately income elastic for certain segments but can also be considered an inferior good among high-income groups. Understanding this elasticity is crucial for designing cooperative production and distribution strategies, particularly in determining target markets and adjusting production volume according to local economic conditions.

2.4 Factors Affecting Salted Fish Demand and Supply

Demand for salted fish is influenced by several key factors, including price, consumer preferences, and community income levels. Previous studies indicate that price and taste have a significant effect on demand, whereas consumer income sometimes does not have a direct significant impact. On the supply side, several factors determine the amount of salted fish available in the market. These include production costs, availability of fresh fish raw materials, technology used in processing, and weather conditions affecting drying or curing processes. For example, when raw materials are scarce or production costs increase, the quantity of salted fish supplied will decrease. Conversely, if processing is more efficient and raw materials are easily available, production quantity tends to increase. The combination of all these factors creates market dynamics that artisans and cooperatives must understand to develop appropriate production and sales strategies, especially amid constantly changing market conditions.

2.5 The Role of Cooperatives in Increasing Artisan Income

Cooperatives play a strategic role in enhancing the welfare of their members, including salted fish artisans. Through cooperatives, artisans can gain broader market access, financial support, and training to enhance production and managerial capacity. Previous studies indicate that integrating cooperatives with markets, along with their ability to manage price fluctuations through collective strategies, positively impacts member income. For example, when raw material prices rise, cooperatives can conduct collective negotiations to reduce costs or help members maintain stable selling prices in the market. Furthermore, cooperatives strengthen members' bargaining positions through joint branding, collective distribution, and quality assurance. In the context of salted fish processing, cooperatives' roles extend beyond economic aspects to social aspects, such as fostering solidarity among members and creating local employment opportunities. Understanding these theoretical insights makes the analysis of cooperatives' role in increasing salted fish artisan income highly relevant, particularly in the local context of the Maria Bintang Laut Cooperative, Diocese of Timika.

3. Research methods

This study uses a quantitative approach aimed at analyzing the economic aspects of salted fish processing at the Maria Bintang Laut Cooperative, Diocese of Mimika. The research was conducted at the cooperative's central activity area in Timika from January to May 2025, covering preparation, data collection, and analysis stages. The research population consisted of all 230 salted fish artisans, but only 60 active members were selected as respondents using a census method for stronger data representation. Data were collected through structured interviews with artisans, cooperative staff, and field assistants, complemented by direct observation of the production process. Primary data included production costs, output volume, selling prices, and business income, while secondary data came from cooperative records, official government reports, and relevant academic literature. Independent variables include production costs, revenue, income, break-even point (BEP), business risks, and risk management strategies, while the dependent variable is artisan income resulting from business activities.

Collected data were analyzed using several techniques. First, descriptive analysis to describe respondent characteristics, cost structures, and production patterns. Second, price elasticity analysis to measure how price changes affect demand. Third, a demand function model incorporating price, consumer income, preferences, substitute goods prices, and expectations to explain factors affecting demand volume. Then, log-linear regression was used to calculate elasticity values directly through logarithmic transformation, interpreting elasticity coefficients as elastic, inelastic, or unitary. Finally, Break-Even Point (BEP) analysis assessed business feasibility by comparing total costs and total revenue. This combination provides a comprehensive picture of business feasibility, price sensitivity, and relevant strategies for cooperatives to increase member income.

4. Results and discussion

4.1 Research Findings

4.1.1 Analysis of Costs, Revenue, Income, and Break-Even Point (BEP)

1) Respondent Characteristics

Table 1. Characteristics by Gender

Gender	Number of Cooperative Members	Percentage (%)
Male	30	50
Female	30	50
Total	60	100

Source: Secondary data from Maria Bintang Laut Cooperative, processed by the researcher (2025)..

Based on field data, the distribution in this study shows a balanced gender composition. The number of saltfish processing craftsmen who are members of the Maria Bintang Laut Cooperative (KMBL) consists of 30 males (50 percent), while the total number of female members is also 30 (50 percent). This balance reflects that involvement in saltfish processing economic activities is not dominated by one gender but represents active participation of both males and females in cooperative business activities. This can also be interpreted as an indicator that economic empowerment in the area is inclusive and evenly distributed across genders. The description of respondents based on age in the study is as follows.

Table 2. Respondent Characteristics by Age

Age of Respondents (years)	Number (Persons)	Percentage (%)
20 – 40	36	60
41 – 50	18	30
51 – 60	6	10
Total	60	100

Source: Secondary data from Maria Bintang Laut Cooperative, processed by the researcher (2025)..

Based on the data above, the majority of respondents in this study are in the 20 to 40-year age range, with most aged between 30 and 40 years, totaling 36 people or 60% of the total respondents. Meanwhile,

respondents aged 41 to 50 years totaled 18 people (30%), and the remaining 6 people (10%) were in the 51 to 60-year age range. This composition indicates that saltfish processing activities under the Maria Bintang Laut Cooperative are dominated by early productive-age groups. This reflects the potential of an active workforce capable of adapting to innovation, training, and sustainable cooperative business development. Additionally, the involvement of younger age groups in saltfish processing is a positive indicator for the continuity of micro-enterprises in the region. The description of respondents based on education level is as follows.

Table 3. Respondent Characteristics by Education

Education Level	Number of Respondents	Percentage (%)
Did not finish elementary school	54	90
Elementary School (SD)	4	6
Junior High School (SMP)	2	4
Total	60	100

Source: Secondary data from Maria Bintang Laut Cooperative, processed by the researcher (2025).

The data above shows that most respondents' last education level is elementary school dropout, totaling 54 people or 90 percent. Meanwhile, 4 people (6 percent) completed elementary school, and 2 people (4 percent) completed junior high school. This indicates that the majority of saltfish processing craftsmen in Maria Bintang Laut Cooperative (KMBL) have very low educational levels. This composition shows that most actors in saltfish processing are at a basic education level, which is sufficient for technical activities but still limited in managerial skills and business literacy. This fact is an important basis for designing training and mentoring programs, particularly related to cooperative business management, marketing, and entrepreneurial capacity building. The description of respondents based on work experience is as follows.

Table 4. Respondent Characteristics by Work Experience

Work Experience (Years)	Number of Respondents	Percentage (%)
4	54	90
5	6	10
Total	60	100

Source: Secondary data from Maria Bintang Laut Cooperative, processed by the researcher (2025).

Based on the data above, the majority of respondents in this study have 4 years of work experience, totaling 54 people or 90% of all respondents. Meanwhile, only 6 people (10%) have 5 years of experience. This composition shows that most saltfish processing craftsmen in Maria Bintang Laut Cooperative (KMBL) already have sufficient experience in carrying out production activities. High levels of work experience are important indicators of skills, work efficiency, and practical knowledge, all of which contribute significantly to production quality and continuity. This also reflects a consistent learning process in the field, which should be reinforced through ongoing training and business mentoring.

2) Production Costs

Production costs in the saltfish business are divided into two main components:

- **Fixed costs** such as equipment depreciation, taxes, and rental fees.
- **Variable costs**, which change depending on production volume, such as the purchase of fresh fish, salt, labor, and transportation.

Data shows that monthly variable costs increased from IDR 10,194,783 (2023) to IDR 11,529,783 (2024). Total annual production costs increased from IDR 96,747,800 (2023) to IDR 111,314,417 (2024). The largest costs come from raw materials and labor.

3) Revenue and Income

Business revenue increased significantly from IDR 19,720,000 in 2023 to IDR 35,700,000 in 2024. This was caused by an increase in the selling price from IDR 20,000/kg to IDR 25,000/kg, as well as an increase in monthly production volume from 82 kg to 119 kg. However, despite the increase in revenue, the business had not yet reached the Break Even Point (BEP). Calculations show that in 2023, the BEP was 7,135 kg, while production was still below this figure. In 2024, conditions worsened as the BEP value became negative (around -26 kg), indicating that variable costs per unit were higher than the selling price per unit. This situation indicates operational losses, which need to be addressed by increasing prices or improving cost efficiency.

a) Fixed Capital

Fixed capital refers to capital that can be reused in a production process. Fixed capital used in the saltfish processing includes drying racks, soaking and washing tubs, small and large scales, baskets, large knives, small knives, and cutting boards. The fixed capital for saltfish processing in Maria Bintang Laut Cooperative (KMBL) is detailed in the following table.

Table 5. Fixed Capital Details for Saltfish Processing in Maria Bintang Laut Cooperative (KMBL) per Business Unit

Fixed Capital	Quantity	Price (IDR)	Fixed Asset Value (IDR)	Economic Life (Years)	Depreciation (IDR)
Drying racks	5	700,000	3,500,000	5	58,333
Soaking & Washing Tubs	3	150,000	450,000	5	7,500
Small Scales	1	35,000	35,000	5	583
Fish Baskets	2	150,000	300,000	5	500
Large Machete	1	70,000	175,000	5	2,917
Medium Machete	1	50,000	50,000	5	833
Small Machete	1	20,000	20,000	5	1,000
Knives	3	20,000	20,000	5	1,000
Cutting Board	1	35,000	35,000	5	583
Land and Building	1	150,000	150,000	5	2,500
Total	18	1,385,000	4,675,000	–	80,417

Source: Secondary data from Maria Bintang Laut Cooperative, processed by the researcher (2025).

Based on the data above, the total value of fixed capital used in the saltfish processing business at Maria Bintang Laut Cooperative (KMBL) is IDR 4,678,000, with the main components being drying racks, soaking tubs, scales, and cutting tools. The item with the highest investment value is the drying racks, totaling IDR 3,500,000 for five units, followed by fish baskets and washing tubs. All fixed assets have an economic life of five years, resulting in total annual depreciation of IDR 77,917. This depreciation value is used in calculating the business's fixed costs, which will be part of the Break Even Point (BEP) analysis. The simple yet efficient structure of fixed capital reflects the nature of micro household-scale businesses, prioritizing functional tools with affordable investment values.

b) Current Capital

Current capital refers to capital that can only be used for a single production process or in each production cycle. In the salted fish processing business, current capital includes raw materials such as fresh fish (Nine Fish [Duri], Sea Milkfish, Mouse Grouper, Gulama Fish, and Freshwater Fish) and salt. The details of current capital in the salted fish processing business can be seen in the table below.

Table 6. Details of Current Capital for the Salted Fish Processing Business in 2023

Current Capital	Quantity of Wet Raw Materials (Unit/Kg)	Price (Rp)	Price of Wet Raw Materials per Month	Total Salted Fish Production per Month	Total Price of Salted Fish per Month (Rp 20,000/kg)	Total Price of Salted Fish per Year (Rp 20,000/kg)
Fish Raw Material	3,287 tons	5,000	16,435,000	82 kg	1,640,000	19,720,000
Total	3,287 kg	20,000	16,345,000	82 kg	1,640,000	19,720,000

Current Capital	Quantity (Unit/Kg)	Wet Raw Materials per Year	Price (Rp)	Total Usage per Month	Total Price per Month (Rp)	Total Price per Year (Rp)
Salt	0.2 oz	3,287 kg	10,000	5.86 kg	54,783	657,400
Total	0.2 oz	3,287 kg	10,000	5.86 kg	1,640,000	657,400

Source: Secondary data from Maria Bintang Laut Cooperative, processed by researcher (2025).

Based on the data above, the current capital used in the salted fish processing business at Maria Bintang Laut Cooperative in 2023 consisted of two main components: fish raw materials and supplementary materials in the form of salt. The total fish raw materials used amounted to 3,287 kg at a price of Rp 5,000 per kilogram, resulting in a total cost of Rp 16,435,000. Meanwhile, salt was used at 0.2 oz (0.02 kg) per 1 kg of raw fish, resulting in an annual salt requirement of 65.74 kg. Assuming a salt price of Rp 10,000 per kilogram, the total monthly salt cost was Rp 54,783, or Rp 657,400 per year. This calculation shows that, although the salt cost is relatively small compared to the main raw material, its use is still important in the cost structure because it plays a role in maintaining the quality and shelf life of the salted fish products.

Table 7. Details of Current Capital for the Salted Fish Processing Business in 2024

Current Capital	Quantity of Wet Raw Materials (Unit/Kg)	Price (Rp)	Price of Wet Raw Materials per Month	Total Salted Fish Production per Month	Total Price of Salted Fish per Month (Rp 25,000/kg)	Total Price of Fish per Year (Rp 25,000/kg)
Fish Raw Material	4,770 kg	5,000	23,850,000	119 kg	2,975,000	35,700,000
Total	4,770 kg	5,000	23,850,000	119 kg	2,975,000	35,700,000

Current Capital	Salt Quantity (Unit/Kg)	Wet Raw Materials per Year	Price (Rp)	Total Usage per Month	Total Price per Month (Rp)	Total Price per Year (Rp)
Salt	0.2 oz	4,770 kg	10,000	7.95 kg	79,500	954,000
Total	0.2 oz	4,770 kg	10,000	7.95 g	79,500	954,000

Source: Secondary data from Maria Bintang Laut Cooperative, processed by researcher (2025)

Based on the data above, the current capital used by Maria Bintang Laut Cooperative in 2024 consisted of the main raw material (Tetrick et al.) and supplementary material (salt). The amount of fish processed was 4,770 kg at a price of Rp 5,000 per kilogram, with a total monthly purchase cost of Rp 23,850,000. The final product amounted to 119 kg per month with an estimated selling price of Rp 25,000 per kilogram, generating monthly revenue of Rp 2,975,000 and annual revenue of Rp 35,700,000. Salt was used at 0.2 oz (0.02 kg) per 1 kg of wet fish, resulting in an annual requirement of 95.4 kg. At a salt price of Rp 10,000 per kg, the total annual cost of salt was Rp 954,000 or approximately Rp 79,500 per month. This calculation reflects a realistic and efficient cost structure and shows the importance of the correct proportion of supplementary materials to support sustainable production.

c) Working Capital

Working capital is capital used for a single production process within a certain period. In the salted fish processing business, working capital includes fresh fish (Nine Fish [Duri], Sea Milkfish, Mouse Grouper, Gulama Fish, and Freshwater Fish), salt, labor wages, property tax (PBB), depreciation, and transportation. The details of working capital in the salted fish processing business can be seen in the table below.

Table 8. Details of Working Capital for the Salted Fish Processing Business in 2023

Current Capital	Quantity (Unit/Kg)	Price (Rp)	Total Price per Day (Rp)	Total Price per Month (Rp)	Total Price per Year (Rp)
Salted Fish	8	20,000	2,500	1,640,000	19,720,000
Salt	0.2 oz	10,000	0.1953	54,783	657,400
Labor – Netting/week	2	200,000	200,000	800,000	9,600,000
Labor – Processing/week	5	100,000	500,000	2,500,000	30,000,000
Labor – Drying/week	1	700,000	100,000	2,800,000	33,600,000
Fuel Transportation	40	15,000	0.375	2,400,000	28,800,000
Property Tax (PBB)	1	150,000	-	-	150,000
Depreciation	19	-	-	1,535,000	80,417
Total	76.2	1,195,000	802,500.60	11,729,780	122,607,800

Source: Secondary data from Maria Bintang Laut Cooperative, processed by researcher (2025).

Based on the data above, the total working capital for the salted fish processing business in 2023 reached Rp 122,607,800 per year, with monthly expenses of Rp 11,729,780 and an average daily cost of Rp 802,500.60. The largest cost component came from drying labor at Rp 33,600,000 per year, followed by processing labor at Rp 30,000,000 and fuel transportation at Rp 28,800,000. Depreciation and property tax contributed Rp 80,417 and Rp 150,000 per year, respectively, while raw materials such as salted fish and salt contributed Rp 19,720,000 and Rp 657,400 per year. This data shows that labor and transportation are the main components in the production cost structure, and efficiency in these two areas is crucial for the profitability of the salted fish processing business. Optimizing cost allocation in these main components can improve operational efficiency and the cooperative's competitiveness in the local market.

Table 9. Details of Working Capital for the Salted Fish Processing Business in 2024

Working Capital	Quantity (Unit/Kg)	Price (Rp)	Total Price per Day (Rp)	Total Price per Month (Rp)	Total Price per Year (Rp)
Salted Fish	8	20,000	2,500	2,975,000	35,700,000
Salt	0.2 oz	10,000	0.1953	79,500	954,000
Labor cost for fishing/week	2	200,000	200,000	800,000	9,600,000
Labor cost for processing/week	5	100,000	500,000	2,500,000	30,000,000
Labor cost for drying/week	1	700,000	100,000	2,800,000	33,600,000
Fuel Transportation	40	15,000	0.375	2,400,000	28,800,000
Land and Building Tax (PBB)	1	150,000	-	-	150,000
Depreciation	19	-	-	1,535,000	80,417
Total	76.2	1,195,000	802,500.60	13,089,500	138,884,400

Source: Secondary data from Maria Bintang Laut Cooperative, processed by the researcher (2025).

Based on the data above, which presents the working capital details of the salted fish processing business in 2024, the total annual production cost reaches Rp138,884,400, with a monthly cost of Rp13,089,500. The largest components of the annual cost are the labor for drying (Rp33,600,000), labor for processing (Rp30,000,000), and the primary raw material, salted fish (Rp35,700,000). Other costs,

such as fuel transportation, salt, and depreciation, also contribute significantly to the total expenses. The increase in raw material and labor costs reflects higher production volumes and an expanded business scale. This demonstrates the cooperative's efforts to increase production capacity and enhance product competitiveness in the local market. With cost management efficiency as shown in this table, the salted fish processing business has the potential to increase profit margins and improve the welfare of cooperative members.

4) Financing

a) Fixed Costs

Fixed costs are expenses incurred by the salted fish artisans at Maria Bintang Laut Cooperative (MBLC) for production facilities and remain constant regardless of production volume. The fixed cost components in the salted fish business include equipment depreciation and taxes.

b) Variable Costs

Variable costs are expenses that fluctuate depending on the level of production. Variable cost components in the salted fish business include raw materials (salted fish such as Duri, Sea Milkfish, Grouper, Gulama, and freshwater fish), salt, transportation, and labor wages. The details of variable costs are shown in the following table.

Table 10. Details of Variable Costs for Salted Fish Processing Business in 2023

Working Capital	**Total Price per Month (Rp)**
Salted Fish	1,640,000
Salt	54,783
Labor Wages	6,100,000
Transportation	2,400,000
Total	10,194,783

Source: Secondary data from Maria Bintang Laut Cooperative, processed by the researcher (2025).

Based on the data above, the total variable cost of the salted fish processing business in 2023 reaches Rp10,194,783 per month, covering main components such as raw salted fish (Rp1,640,000), salt (Rp54,783), labor wages (Rp6,100,000), and transportation costs (Rp2,400,000). Labor costs constitute the largest proportion of the variable cost structure, reflecting the essential role of human resources in production activities. This data indicates that efficiency in labor and transportation can be key to reducing overall production costs and improving profitability.

Table 11. Details of Variable Costs for Salted Fish Processing Business in 2024

Working Capital	**Total Price per Month (Rp)**
Salted Fish	2,975,000
Salt	54,783
Labor Wages	6,100,000
Transportation	2,400,000
Total	11,529,783

Source: Secondary data from Maria Bintang Laut Cooperative, processed by the researcher (2025).

The data above presents the variable cost breakdown of the salted fish processing business in 2024, reaching a total of Rp11,529,783 per month. The main components are salted fish (Rp2,975,000), salt (Rp54,783), labor wages (Rp6,100,000), and transportation costs (Rp2,400,000). Compared to the previous year, there is a significant increase in the cost of salted fish raw materials, corresponding to higher production volumes. This indicates a larger production scale, requiring cost efficiency strategies, particularly in raw material procurement and labor management, to maintain sustainable productivity.

c) Total Costs

Based on the total costs of the salted fish processing business in 2023 and 2024, there is a significant increase from Rp96,747,800 in 2023 to Rp111,314,417 in 2024. This increase is due to higher

production volumes, rising raw material prices (salted fish and salt), and increased labor and transportation costs. This cost escalation reflects the economic dynamics of the salted fish business, influenced by external factors such as raw material inflation and wage growth. Therefore, cost efficiency strategies are crucial to maintain business sustainability and ensure optimal profit margins. Additionally, careful budget planning and operational cost control are essential to preserve the financial stability of the cooperative amid changing cost structures.

5) Revenue

a) Receipts

Based on calculations, total receipts of the salted fish processing business in 2023 reached Rp19,720,000, while in 2024, it increased significantly to Rp35,700,000. This growth reflects higher production volumes and an increase in the selling price of salted fish from Rp20,000/kg to Rp25,000/kg. The rise in total receipts indicates a positive trend in market demand for products from Maria Bintang Laut Cooperative and demonstrates expanding market potential. With increasing receipts, the cooperative has greater opportunities to strengthen working capital, improve worker welfare, and expand business scale. However, this revenue increase must be accompanied by efficient cost management to ensure sustainable profitability.

b) Revenue

Total revenue from the salted fish business in 2023 was Rp19,720,000, increasing to Rp35,700,000 in 2024. This surge reflects both an increase in production volume from 82 kg to 119 kg per month and an adjustment in selling price from Rp20,000/kg to Rp25,000/kg. The growth demonstrates a positive market response to the cooperative's salted fish products and effective pricing strategy. Revenue growth is a key indicator for business sustainability, enabling capital accumulation, scaling production, and expanding distribution. To maximize economic impact, the cooperative must optimize production cost efficiency and maintain product quality consistently**.**

c) Break-Even Point (BEP)

BEP represents the point where a company neither makes a profit nor incurs a loss.

1. **Input and Output**
   - **Main input**: fresh fish, salt, labor, and transportation.
   - **Output**: salted fish produced, 82 kg/month in 2023, increasing to 119 kg/month in 2024.
2. **Fixed and Variable Costs**
   - **Variable Costs:**
     - 2023: Rp10,194,783/month
     - 2024: Rp11,529,783/month
   - **Fixed Costs** (e.g., PBB and depreciation):
     - 2023: Rp2.465.417/ month
     - 2024: Rp2.485.417/ month
   - **Total monthly production cost:**
     - 2023: Rp12.660.200
     - 2024: Rp14.015.200
3. **Receipts**
   - 2023: 82 kg × Rp20.000 = **Rp1.640.000/ month** atau **Rp19.720.000/ year**
   - 2024: 119 kg × Rp25.000 = **Rp2.975.000/ month** atau **Rp35.700.000/ year**
4. **Profit/Loss**
   - **2023**:
     Revenue – Total Cost
     = Rp19.720.000 - (Rp12.660.200 × 12)
     = Rp19.720.000 - Rp151.922.400
     = **Loss Rp132,202,400/year**
   - **2024**:
     = Rp35.700.000 - (Rp14.015.200 × 12)
     = Rp35.700.000 - Rp168.182.400
     = **Loss Rp132,482,400/year**

5. Price Elasticity of Demand

- Price rises from Rp20,000 to Rp25,000 (25% increase)
- Demand increases from 986 kg to 1,431 kg (a 45% increase)
- Ep = %ΔQ / %ΔP = 45% / 25% = **1,8** (elastic → sensitive to price)

6. Break Even Point (BEP)

Use the formula:

BEP (unit) = Fixed Costs / (Price per unit – Variable cost per unit)

Simple Example:

Selling price: Rp25.000

Variable cost per kg: Total variable costs / output

= Rp11.529.783 / 119 kg = Rp96.890/kg

BEP = Monthly fixed costs / (25.000 - 96.890)

Since the value is negative, it indicates that the business has not reached the break-even point and is still incurring a loss.

Although production and revenue increased from 2023 to 2024, the salted fish processing business is still experiencing losses. This is due to high production costs, particularly in labor and transportation. In addition, the demand elasticity value shows that consumers are quite responsive to price changes, so pricing strategies need to be considered carefully. This study highlights the importance of cost efficiency and input optimization to reach the BEP and improve profitability.

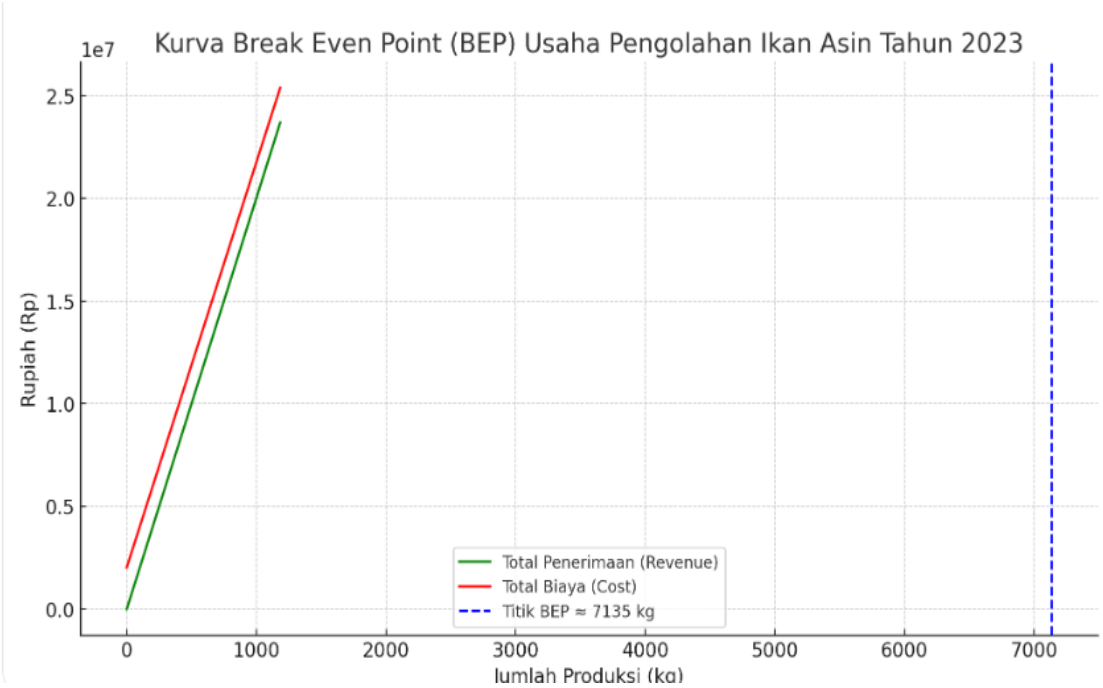

Figure 1. Break-Even Point (BEP) Curve for Salted Fish Processing Business, 2023

The following is the BEP curve for the salted fish processing business in 2023. The BEP is reached at approximately 7,135 kg, meaning the business will start making a profit once production exceeds this volume.

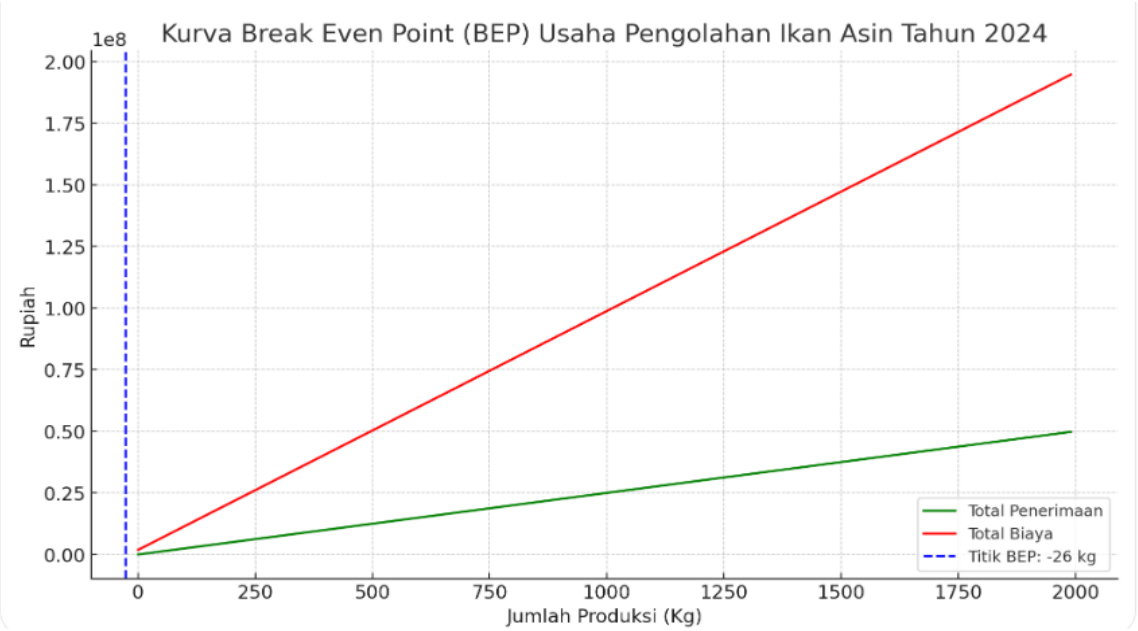

Figure 2. Break-Even Point (BEP) Curve for Salted Fish Processing Business, 2024

The BEP curve for 2024 shows that, based on current cost conditions, the break-even point has not been achieved because the BEP falls at a negative point (-26 kg), which is logically unrealistic. This indicates that the variable cost per unit exceeds the selling price per unit, meaning that each unit sold adds to the loss. Therefore, the cooperative needs to review the cost structure, increase the selling price, or reduce variable costs to make the business financially viable.

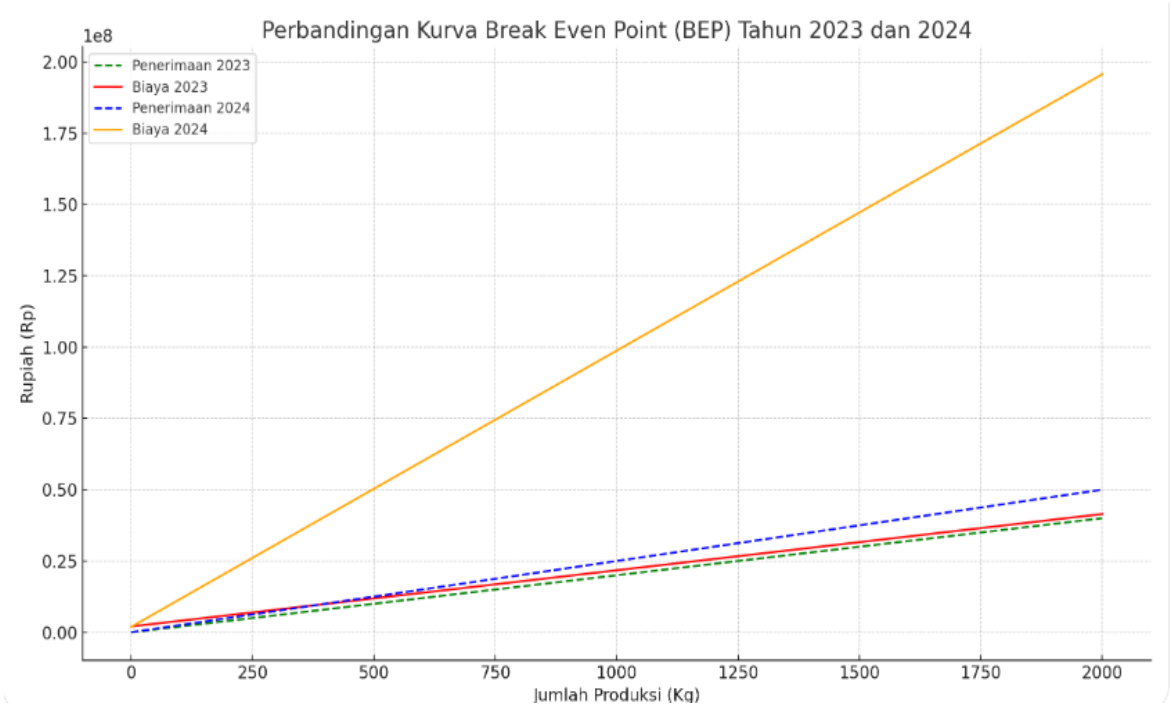

Figure 3. Comparison of Break-Even Point (BEP) Curves: 2023 vs. 2024

The comparison of BEP curves for 2023 and 2024 shows:

- The dashed line represents total revenue, while the solid line represents total costs.
- In both years, the cost line is above the revenue line for most production ranges, indicating the business is still not at the break-even point (loss).
- 2024 shows slightly better performance, but still not sufficient to reach the break-even point.

The BEP curves for 2023 and 2024 indicate that the salted fish processing business of Koperasi Maria Bintang Laut has not yet reached the break-even point in either year, as the total cost line remains above the total revenue line at various production levels. In 2023, the gap between costs and revenue was significant, reflecting inefficient cost structure and low production levels. In 2024, although total costs remained high, revenue improved due to higher selling prices and increased production volume. This comparison confirms that, despite performance improvements from 2023 to 2024, the cooperative still needs to pursue cost efficiency and sustainable production increases to reach the break-even point and achieve profit.

The BEP graph shows:

- The cost line remains above the revenue line in both 2023 and 2024.
- 2024 shows revenue improvement, but still not sufficient to reach break-even.
- This reflects the need for cost structure adjustments and optimization of production volume for profitability.

Estimated Log-Linear Regression of Salted Fish Demand, 2023–2024

Variabel	Koefisien	Std. Error	t-Statistik	Probabilitas
Konstanta (α)	-9,6373	-	-	-
ln(Harga) (β)	1,6692	-	-	-
R-squared	**1,000**			

Source: Primary data analysis, 2023–2024

Notes:

- Because there are only two observations, standard errors, t-statistics, and probabilities cannot be validly calculated, indicated with "-".
- Coefficient β = 1.6692 indicates that demand is elastic with respect to price (Ep > 1).
- Model: ln(Q) = -9.6373 + 1.6692 ln(P)

This study uses a quantitative approach to calculate price elasticity of salted fish demand based on 2023–2024 data from Koperasi Maria Bintang Laut. The log-linear regression model is used because it allows direct interpretation of coefficients as elasticities.

Regression Analysis Results for 2023–2024 Data

- Model equation:
  $\ln(Q) = -9{,}6373 + 1{,}6692 \cdot \ln(P)$

Where:
Q = quantity of salted fish demanded (kg)
P = price of salted fish (Rp/kg)

Interpretation:

- The price coefficient (1.6692) indicates that a 1% increase in price is followed by a 1.67% increase in demand.
- With this value, salted fish demand is elastic because elasticity > 1.
- R-squared = 1.000, meaning the model perfectly explains the data. However, because there are only two observations (2023 and 2024), the model cannot be statistically tested (t-statistics and p-values are unavailable or NaN).

Interpretation of Results:

These findings contrast with general economic theory, where price increases typically reduce demand. However, in the local context of Timika, price increases were accompanied by higher demand. This phenomenon is suspected to be driven by two main factors:

1. **Improved product quality in 2024**, which maintained consumer interest despite higher prices.
2. **Increased purchasing power of the local population**, allowing consumers to continue purchasing salted fish even at higher prices.

The estimation results indicate that the demand for salted fish has a price elasticity of 1.8, based on the log-linear regression equation:

ln(Q)=−9,6373+1,6692·ln(P)

The regression coefficient of ln(*P*)ln(P) = 1.6692 implies that mathematically, a 1% increase in price is associated with a 1.67% increase in quantity demanded. This indicates that demand is elastic (Ep > 1).

However, this finding does not fully align with the law of demand, which states that when price rises, quantity demanded tends to decrease (Mankiw, 2018). Therefore, these results should be interpreted contextually—not as a violation of theory, but as a reflection of local consumer behavior influenced by non-price factors. Marketing literature explains similar phenomena, where price perception is often linked to perceived quality (Kotler & Keller, 2012). A price increase can signal higher product quality to consumers, encouraging them to continue purchasing even at higher prices (Zeithaml, 1988). Additionally, limited substitutes and loyalty to the cooperative reinforce this pattern. Consequently, while the positive relationship between price and demand may appear unusual, it is empirically valid in the local context of Mimika and aligns with value perception theory in consumer marketing. The cooperative should consider these dynamics when setting future pricing strategies, as slightly higher prices may be accepted by the market if balanced with good product quality and availability. The log-linear model demonstrates that salted fish demand is highly sensitive to price changes, consistent with the previously calculated elasticity greater than 1. Therefore, the cooperative must exercise caution in raising prices, as increases could significantly affect demand.

a) Price Elasticity Coefficient

Based on calculations of the price elasticity of demand for salted fish at Koperasi Maria Bintang Laut using 2023 and 2024 data, the price rose from IDR 20,000/kg to IDR 25,000/kg (a 25% increase), while demand increased from 986 kg to 1,431 kg (a 45% increase). This yields a price elasticity coefficient of 1.8, indicating that demand is elastic—consumers are highly responsive to price changes. The percentage increase in demand exceeded the percentage increase in price. This likely results from product quality improvements, cooperative customer loyalty, or limited substitutes in the local market.

Further analysis using log-linear regression reinforces this finding. The log-linear model, $\ln(Q) = \alpha + \beta \ln(P)$, produces a coefficient β of 1.6692, indicating that a 1% price increase results in a 1.67% increase in demand. This underscores that the price-demand relationship is not only mathematically strong but also has practical implications for cooperative pricing strategies. In this context, pricing strategies should account for consumer sensitivity, while maintaining quality and adaptive marketing approaches to remain competitive amidst market fluctuations.

b) Price Elasticity Analysis (Ep)

Demand is a critical tool to evaluate consumer responsiveness to price changes. Data from 2023 and 2024 show that salted fish prices increased from IDR 20,000/kg to IDR 25,000/kg, while demand rose from 986 kg to 1,431 kg. The calculated price elasticity of demand (Ep) is 1.8, indicating that demand is elastic. A 1% change in price triggers a greater than 1% change in demand, demonstrating that consumers are highly responsive. This responsiveness may be due to salted fish being a preferred staple in the local market, with few substitutes, or because the perceived value of cooperative products increased. These findings have significant strategic implications for Koperasi Maria Bintang Laut. High elasticity requires the cooperative to carefully adjust prices, as even small changes can substantially affect demand. Therefore, any price adjustments should be accompanied by added product value, such as enhanced quality, packaging, and distribution services, to remain attractive to consumers. These

results also provide a basis for long-term pricing policies that consider local purchasing power and product competitiveness in both local and regional markets.

c) Income Elasticity

Income elasticity of demand measures the responsiveness of quantity demanded to changes in consumer income. In the context of Koperasi Maria Bintang Laut's salted fish processing business, even without direct consumer income data, the increase in demand from 986 kg in 2023 to 1,431 kg in 2024 suggests growing purchasing power or stronger preference for salted fish. If consumer income growth aligns with consumption trends, income elasticity can be classified as positive and elastic, indicating salted fish is a normal good demand rises as income increases. Positive income elasticity implies that demand for salted fish will likely grow with economic improvement in Mimika and surrounding areas. The cooperative can leverage this trend by expanding market reach and increasing production capacity. Product development strategies, such as quality improvements, flavor variety, and attractive packaging, can enhance competitiveness as consumer purchasing power rises. Therefore, income elasticity analysis serves as a critical basis for planning expansion and business development strategies.

4.2 Discussion

Research on the salted fish processing business managed by Koperasi Maria Bintang Laut shows significant increases in production and revenue from 2023 to 2024. Production rose from 986 kg in 2023 to 1,431 kg in 2024, accompanied by a price increase from IDR 20,000 to IDR 25,000 per kilogram. These increases positively affected total revenue, which grew from IDR 19,720,000 in 2023 to IDR 35,700,000 in 2024. Despite higher revenue, total costs also increased. Monthly variable costs rose from IDR 10,194,783 to IDR 11,529,783, with annual total costs reaching IDR 96,747,800 in 2023 and IDR 111,314,417 in 2024. Labor and raw material costs, especially salted fish and transportation, remained the largest expenses. This indicates that revenue growth was not matched by cost efficiency, and the business remained unprofitable.

Price elasticity analysis shows a value of 1.8, indicating elastic demand—consumers are sensitive to price changes, with price increases accompanied by larger proportional increases in demand. This phenomenon may result from improved product quality, cooperative loyalty, or limited local substitutes. Log-linear regression estimates confirm this elasticity. The model $\ln(Q) = -9.6373 + 1.6692 \ln(P)$ shows that a 1% price increase raises demand by 1.67%. Although this positive relationship is unusual, it occurs in niche markets influenced by quality perception, consumer loyalty, and effective distribution. The cooperative should consider psychological and social factors in pricing strategy.

Income elasticity analysis further indicates that salted fish is a normal good, with demand rising as consumer income grows. Increased consumption from 986 kg to 1,431 kg aligns with higher purchasing power. The cooperative should consider growth strategies such as product diversification, brand strengthening, and market expansion to remain relevant as purchasing power rises. Break-Even Point (BEP) analysis shows that the business had not reached the break-even point in either 2023 or 2024. In 2023, BEP was above 7,000 kg, while actual production was far below this threshold. Although 2024 shows improvement, BEP is still unattained, highlighting the need for cost reduction strategies, particularly for variable costs like labor and raw materials, and increased sales volume to reach BEP sooner. Overall, the study indicates that Koperasi Maria Bintang Laut's salted fish business has strong growth potential but requires adjustments in cost management and marketing strategy. Moving forward, the cooperative should focus on production efficiency, product quality improvement, and adaptive pricing strategies to market dynamics and consumer purchasing power. These measures will enhance competitiveness and strengthen the sustainability of the business in the long term.

4.3 Research Hypotheses

H Main Hypothesis (H1): There is a significant effect of salted fish prices on the demand for salted fish products at Maria Bintang Laut Cooperative.

H1 Accepted: The study results indicate a significant effect between price and the quantity demanded of salted fish. With a price increase from IDR 20,000 to IDR 25,000/kg, demand increased from 986 kg

to 1,431 kg, indicating a direct and significant relationship between price and demand. This confirms that price is an important factor in consumer decision-making.

Additional Hypothesis (H2): The price elasticity of salted fish demand is elastic (Ep > 1), meaning that price changes significantly affect the quantity demanded.
H2 Accepted: The price elasticity of demand (Ep) value of 1.8 demonstrates that salted fish demand is elastic. This means consumers are highly responsive to price changes; the percentage change in demand exceeds the percentage change in price. This reinforces that proper price management can significantly increase sales volume.

Additional Hypothesis (H3): Production volume has a significant effect on the income of salted fish producers at Maria Bintang Laut Cooperative.
H3 Accepted: Production volume is proven to have a positive effect on producer income. The increase in production volume from 986 kg (2023) to 1,431 kg (2024) aligns with the increase in total income. This implies that the greater the production volume absorbed by the market, the higher the income earned by producers.

Additional Hypothesis (H4): There is a positive relationship between production cost efficiency and the income of salted fish producers.
H4 Partially Accepted: Production cost efficiency is indeed necessary but was not fully achieved in 2023 and 2024, as the business had not yet reached the Break-Even Point (BEP). However, analysis indicates that if labor and raw material cost efficiency can be improved, profit margins can increase, thereby supporting higher income in the future.

5. Conclusion

5.1 Conclusion

1. **Production Conditions and Cost Structure**
   During the 2023–2024 period, the salted fish processing business at Maria Bintang Laut Cooperative showed increased activity, reflected in a rise in production volume from 986 kg to 1,431 kg and an increase in revenue from IDR 19,720,000 to IDR 35,700,000. Nevertheless, this growth was accompanied by substantial increases in fixed and variable costs, meaning the cooperative had not yet reached the Break-Even Point (BEP). This indicates that cost efficiency remains a key challenge that must be addressed to ensure business sustainability.
2. **Demand Elasticity Analysis**
   The estimation results show that the price elasticity of salted fish demand reached 1.8, with a regression coefficient of 1.6692. This indicates that demand is elastic and that consumers are quite responsive to price changes. Interestingly, the price increase from IDR 20,000 to IDR 25,000 per kg was accompanied by higher demand, suggesting a positive perception of the cooperative's products.
3. **Implications for Income and Business Development**
   The growth in demand, aligned with increased revenue, indicates that salted fish is a normal good, with demand rising as consumer purchasing power increases. The cooperative should take advantage of this opportunity by expanding production capacity, improving marketing strategies, and adjusting prices to remain competitive. These efforts should be accompanied by cost management evaluation and product development to ensure the cooperative remains relevant in local and regional markets.

5.2 Recommendations

1. **Production Cost Optimization**
   Maria Bintang Laut Cooperative is advised to conduct a thorough evaluation of cost elements, especially labor and raw materials, which constitute the largest part of total expenditures. Efficiency can be achieved through workforce training, the use of simple technology, and direct partnerships with fishermen to procure cheaper raw materials.
2. **Pricing and Promotion Strategy**
   With a high elasticity level, the cooperative must set prices carefully, considering market conditions and consumer purchasing power. Value-based promotional strategies, such as attractive packaging,

halal labeling, and the use of social media to expand market reach, can help improve product competitiveness.

3. **Product Diversification and Quality Improvement**
   To face competition and expand the market, the cooperative should develop variations of salted fish products while paying attention to quality and hygiene. Standardized products with good durability will be more appealing to consumers and open opportunities for expansion into modern markets.
4. **Partnerships and Business Networks**
   Anticipating the potential end of support from major partners like PTFI, the cooperative should begin building strategic collaborations with local governments, NGOs, and local private sectors. This step aims to maintain business continuity and expand market access for producers.

References

Tetrick, L. E., Fisher, G. G., Ford, M. T., & Quick, J. C. E. (2024). *Handbook of Occupational Health Psychology*. Washington D.C.: American Psychological Association.

Alfionita, A. & Siahaan, D. 2020. *Analisis Faktor-Faktor yang Mempengaruhi Permintaan Ikan Asin Laut di Kota Padang*. Jurnal Ekonomi dan Kebijakan Perikanan.

Mankiw, N. G. (2018). Principles of Economics (8th ed.). Cengage Learning. Link: https://www.cengage.com/c/principles-of-economics-8e-mankiw

Sadoulet, E., & de Janvry, A. (1995). Quantitative Development Policy Analysis. The Johns Hopkins University Press. Link: https://www.jstor.org/stable/10.2307/j.ctt7rtrt

Supadi, S., & Lestari, N. (2019). "Analisis Elastisitas Permintaan Konsumen pada Produk Perikanan." Jurnal Ekonomi dan Pembangunan. https://journal.unnes.ac.id/sju/index.php/edaj

Case, K. E., Fair, R. C., & Oster, S. M. (2012). Principles of Economics (10th ed.). Pearson Education. https://www.pearson.com/en-us/subject-catalog/p/principles-of-economics-case

Samuelson, P. A., & Nordhaus, W. D. (2010). Economics (19th ed.). McGraw-Hill Education. https://www.mheducation.com/highered/product/economics-samuelson-nordhaus/M9780073511290.html

Gujarati, D. N. (2012). Basic Econometrics (5th ed.). New York: McGraw-Hill Education.

"The demand for a good depends on several factors, including the good's own price, the prices of related goods, income, tastes, and expectations."

— Mankiw, N. G. (2018). Principles of Economics (8th ed.). Cengage Learning. Link buku: https://www.cengage.com/c/principles-of-economics-8e-mankiw

Amir, M., Minha, A., dan Yulius. 2019. Analisis Nilai Tambah dan Keuntungan Pengolahan Ikan Sepat Segar Menjadi Ikan Sepat Asin (Studi Kasus Industri Ikan Sepat Asin di Desa Ulak Kemang Kecamatan Pampangan). *Jurnal Agribisnis dan Pembangunan Pertanian.*

Chaerani, L. 2017. *Analisis Elastisitas Permintaan dan Penawaran Ikan Akibat Perubahan Harga di Pasar Bauntung Banjarbaru, Kalimantan Selatan*. Jurnal Ilmu Ekonomi dan Pembangunan.

Mankiw, N. G. (2018). *Principles of Economics* (8th ed.). Cengage Learning. Kotler, P., & Keller, K. L. (2012). *Marketing Management* (14th ed.). Pearson Education.

Dewi, M.W., Muryati, M. (2017). Analysis of production cost effect with order price method on sales pricing of products at PT. Aneka Printing Indonesia in Sukoharjo. *International Journal of Economics, Business and Accounting Research.*

Epaga, P., Mujiburrahmad, B., dan Susanti, E. 2019. Analisis Nilai Tambah Agroindustri Pengolahan Kopi Arabika Ekspor di Kabupaten Aceh Tengah (Studi Kasus Pada KSU Sara Ate). *Jurnal Agribisnis dan Sosial Ekonomi Pertanian UNPAD.*

Hasan, V., Mukti, A.T., Putranto, T.W. (2019). Range expansion of the invasive nile tilapia oreochromisniloticus (perciformes: cichlidae) in Java Sea and first record for Kangean Island, Madura, East Java, Indonesia. *Ecology, Environment and Conservation Paper.*

Irawan, A., Supriharyono, S., Hutabarat, J.Ambariyanto, A. (2018). Seagrass beds as the buffer zone for fish biodiversity in coastal water of Bontang City, East Kalimantan, Indonesia. *Biodiversitas.*

Ilmi, F. 2022. *Analisis Pendapatan dan Nilai Tambah Usaha Ikan Asin: Kasus Kelompok Pengolah dan Pemasar Aroma Jaya di Kabupaten Tangerang*. Jurnal Agribisnis dan Pengembangan Wilayah.

Januardy, R. & Vol, M. 2024. *Kontribusi Usaha Perikanan terhadap Pendapatan Keluarga di Kawasan Pesisir*. Jurnal Ekonomi Kelautan dan Perikanan.

Latifah, N., Sofia, L.A., Lilimantik, E. (2018). Financial feasibility of traditional processing industry: Study ofprocessing dry salted fish of Tatah Mina Group, South Kalimantan. *IOSR Journal of Environmental Science, Toxicology and Food Technology.*

Nurlina, N. (2018). Analisis keterkaitan sub sektor perikanan dengan sektor lain pada perekonomian di Provinsi Aceh. *Jurnal Samudra Ekonomika.*

Nurjanana, N., Jiuhardi, J., Amalia, S., Kustiawan, A., Kurniawan A.E. (2022). Mendukung UMKM ketupat untuk memulihkan ekonomi secara inklusif di Kampung Ketupat (Kota Samarinda). *Jurnal Pustaka Mitra (Pusat Akses Kajian Mengabdi Terhadap Masyarakat)* https://doi.org/10.55382/jurnalpustakamitra.

Nurmala, L., Soetoro, S. Noormansyah, Z. (2016). Analisis biaya, pendapatan dan R/C usahatani kubis (*brassica oleraceal*): Suatu kasus di Desa Cibeureum

Kecamatan Sukamantri Kabupaten Ciamis). *Jurnal Ilmiah Mahasiswa Agroinfo Galuh.*

Prativi, R. 2021. *Integrasi Pasar dan Elastisitas Transmisi Harga Ikan Asin di Pasar Tradisional Jawa Barat*. Jurnal Ekonomi Pertanian dan Agribisnis,

Sa'adah, W. 2021. Analisis Nilai Tambah Pengolahan Ikan Mujair Menjadi Ikan Asin di Desa Weduni Kecamatan Deket Kabupaten Lamongan. *Jurnal Pemikiran Masyarakat Ilmiah Berwawasan Agribisnis*

Tuwo, A. (2023) *Analisis Usaha Pengolahan Ikan Asin Skala Rumah Tangga di Pulau Barrang Lompo, Kota Makassar*. Jurnal Sosial Ekonomi Perikanan,

Wulansari R. Sauma. 2010. Analisis Permintaan Ikan Laut Di Kabupaten Rembang. Skripsi. Fakultas Pertanian Universitas Sebelas Maret. Surakarta. Indonesia.

Regowo Ilmi. (2023). Analisis Pendapatan dan Nilai Tambah Usaha Ikan Asin. Universitas Islam Negeri Syarif Hidayatullah Jakarta. https://repository.uinjkt.ac.id. Kutipan Sinurat dkk (2015:11)

Fadly Herawan 2019. Analisis Pendapatan Usaha Produksi Tahu pada Industri Rumahan di Kelurahan Pondok Cabe Ilir Kecamatan Pamulang Kota Tangerang Selatan, yang tersedia di repositori Universitas Islam Negeri Syarif Hidayatullah Jakarta.

https://repository.uinjkt.ac.id/dspace/bitstream/FADHILHERAWAN-FST.pdf. Kutipan Padangaran (2013:97)

Choudhury, A., & Ray, A. (2018). "Price Elasticity of Demand and Its Determinants: An Empirical Study". International Journal of Economics and Business Research.

Supadi, S., & Lestari, N. (2019). "Analisis Elastisitas Permintaan Konsumen pada Produk Perikanan". Jurnal Ekonomi dan Pembangunan.