Case study

Investment Review in Marine Fish Distribution, Baleendah Sub-District, Bandung District, Indonesia

ABSTRACT

The stable of fish availability as a crucial source of affordable animal protein with commendable nutritional content, contributing significantly to quality protein intake. To provide and ensure a steady supply of raw materials, a marine fish distributor in Baleendah Sub-district, Bandung Regency, is imperative. This distributor, functioning as a fish container (cold storage), acts as a crucial link between major marine fish producers and local fish processing farmers (Marwan 2013). During abundant fish seasons, the distributor collects fish, supporting prices during limited stock periods. This strategic intervention ensures the continuity of activities for salt-boiled fish processing farmers in Bandung Regency.The key objectives in establishing a marine fish distributor in Baleendah Sub-district, Bandung Regency, include optimizing the operation of distribution facilities and infrastructure. This optimization ensures a consistent supply of raw materials, reducing price fluctuations and ultimately lowering the production cost of processed fish. Additionally, the initiative aims to foster investment and business development in the marine fish distribution sector in Bandung Regency. By providing quality and continuous access to marine fish, the project also seeks to stimulate the growth of fish processing businesses in the region.

Keywords: marine fishes, distribution, processing, investment

1. INTRODUCTION

Fish stands out as a crucial source of affordable animal protein with commendable nutritional content, contributing significantly to quality protein intake (Langi et al. 2011). The positive correlation between increased fish consumption and improved nutritional status underscores its importance in enhancing human resources. However, the highly perishable nature of fishery products poses challenges in marketing, distribution, and storage in fresh form. Consequently, processing fish, exemplified by products like salt-boiled fish, not only addresses preservation concerns but also elevates the product's value through diversified processing. Beyond preservation, fish processing serves as a catalyst for household industry development, empowering communities and contributing to non-oil and gas sector foreign exchange (Veiga-Malta et al. 2019).

The fish processing potential in Bandung Regency, especially in salt boiling fish, is substantial, boasting approximately 700 processors across various sub-districts with a monthly business capacity of 1,750 - 3,150 tons. Nevertheless, a significant challenge faced by these processors is the seasonal and fluctuating availability of sea fish, the primary ingredient for salt-boiled fish(Effendi dan Oktariza, 2006). The dynamics of sea fish availability and transportation intricacies lead to price fluctuations and stock uncertainties(Yolanda et al. 2013)..

To address these challenges and ensure a steady supply of raw materials, a marine fish distributor in Baleendah Sub-district, Bandung Regency, is imperative. This distributor, functioning as a fish container (cold storage), acts as a crucial link between major marine fish producers and local fish processing farmers(Marwan 2013).. During abundant fish seasons, the distributor collects fish, supporting prices during limited stock periods. This strategic intervention ensures the continuity of activities for salt-boiled fish processing farmers in Bandung Regency.

The key objectives in establishing a marine fish distributor in Baleendah Sub-district, Bandung Regency, include optimizing the operation of distribution facilities and infrastructure. This optimization ensures a consistent supply of raw materials, reducing price fluctuations and ultimately lowering the production cost of processed fish. Additionally, the initiative aims to foster investment and business development in the marine fish distribution sector in Bandung Regency. By providing quality and continuous access to marine fish, the project also seeks to stimulate the growth of fish processing businesses in the region.

2. MATERIALS AND METHODS

This article evolved through a meticulous literature review that explored into research findings and survey outcomes, encompassing aspects such as marine fish distributors, processor potentials, salt-boiled fish, market mapping, and more. The literature search spanned references to articles published in journals and other publications relevant to marine fish distributors in the Bandung Regency area. To streamline this citation process, a diverse set of tools was employed, including searches in scientific journal databases, and other pertinent information sources, leveraging Google Scholar and navigating official websites via Google Chrome.

The study followed a structured approach, aligning with established guidelines (Templier and Paré, 2015), involving six key steps: formulating and clarifying the study question(s), thoroughly reviewing the existing literature, defining inclusion criteria, assessing the quality of primary research, processing gathered information, and finally, interpreting the data to compose a comprehensive summary. The preparation of materials entailed a comprehensive library research approach, assimilating literature from various sources such as books, articles, and research findings, obtained through both traditional library searches and online exploration. The extension survey activities were meticulously planned, featuring well-coordinated efforts between the research team and diverse fish distributors in the Bandung Regency.

3. RESULTS AND DISCUSSIONS

3.1 Technical Aspect

3.1.1 Overview of Fish Processing Potential in Bandung Regency

Bandung Regency harbors significant potential in the fisheries sector, particularly within the realm of fish processing (Komarudin, 2020). Up until 2004, the region boasted a substantial number of fish processors, spanning across diverse sub-districts, with a recorded count of 738 production households contributing to a cumulative production of 14,797,960 kg. The array of processed fish encompasses a variety, including salt-boiled fish, fish crackers, salted fish, presto milkfish, shredded fish, and an assortment of other processed fish. Based on data from the West Java Province Maritime and Fisheries Service (2019). For a more detailed breakdown, the distribution of fish processors and the range of processed commodities in Bandung Regency is elucidated in Table 1 below:

Table 1. Distribution of Fish Processors and Processed Fish Commodities in Bandung Regency

Sub-district	Ward	Commodity	Household	Production (kg)

Bojongsoang	Lengkong	Salt-boiled fish (common carp, milkfish, mackerel tuna, yellow-stripe trevally, sardines)	30	540,000
	Ciganitri		10	90,000
	Bojongsoang		368	3,312,000
Banjaran	Kamasan	Various processed fish	10	60,000
	Neglasari	Various processed fish	10	60,000
	Kiangroke	Salt-boiled fish	9	216,000
Pasir Jambu	Cibodas	Salt-boiled fish (common carp, milkfish, mackerel tuna, yellow-stripe trevally, sardines)	80	4,800.000
	CukangGenteng		40	2,400.000
Ciwidey	Panyocokan	Salt-boiled fish	8	144,000
Cicalengka	Cicalengka	*Ecot*salt-boiled fish	1	12,000
Cililin	Bongas	Salt-boiled (common carp, tilapia), pangasius salted fish	55	495,000
Cipeundeuy	Margalaksana	Various processed fish	20	72,000
Pameungpeuk	Rancatungku, Sukasari	Various processed fishes Fish crackers	12	28,800
Margahayu	Margahayu Tengah	Fish crackers	8	192,000
Ciparay	Mekarsari	Salt-boiled fish	17	510,000
Baleendah	Jelekong	Salt-boiled fish	22	660,000
Padalarang	Padalarang	Salted snakehead fish	1	6,000
Katapang	Katapang	Pressure cooker salt-boiled milkfish, salt-boiled mackerel tuna	13	156,000
Ibun	Talun	Salt-boiled fish	3	90,000
Dayeuhkolot	CangkuangWetan	Salt-boiled fish	13	702,000
Majalaya	Majalaya	Salt-boiled fish	7	252,000
Ngamprah	Ngamprah	Fish floss	1	160
		Total	738	14,797,960

3.1.2 Facilities and Infrastructure

Currently, two companies are actively involved in the distribution of marine fish in Bandung Regency, precisely situated in Jelekong Village, Baleendah Subdistrict. These entities serve as crucial suppliers of marine fish to processing farmers across multiple sub-districts within Bandung Regency. Essential facilities required for marine fish distributors encompass:

1) Administration Office
2) Cold Storage: A room measuring 5 x 6 x 2.8 m designed to maintain a temperature below 0^{o}C. Estimated cost: IDR 200 million
3) Sitting Scales: With a capacity of 150 kg (Cost = IDR500,000,-).
4) Plastic Baskets: 20 pcs sized at 100 x 60 x 50 cm each, 10 kg capacity, priced at IDR 100,000 per piece.
5) Push Wheels: 2 pcs priced at IDR 250,000,- each.
6) Electricity: With a power capacity of 13,000 watts (Monthly cost = 1.7 million rupiahs).

7) Freon: Priced at IDR 250,000 for five months
8) Pick-up Car: A vehicle with a capacity of 1.5 tons, one piece priced at IDR 45,000,000,-.
9) Labor: Staffing requirements include warehouse personnel (2), a driver (1), administrative staff (2), and a manager (1).

Figure 1. Fish Weighing Process

3.1.3 Scope of Activities

Marine fish distributors engage in a range of activities aimed at sourcing fish from different locations and distributing them to fish processing farmers, particularly for salt-boiled fish production. The primary locations for fish sourcing include Jakarta, Surabaya, and Sulawesi. Varieties of marine fish meeting the requirements of processing farmers, such as mackerel tuna (Jakarta), skipjack tuna (Jakarta, Sulawesi, Surabaya), sardines (Jakarta, Surabaya), *Decapterus* sp. (Jakarta, Sulawesi)(Azizah, Mahari & Dwi, Aprilia 2021).. Mackerel tuna, whole milkfish, and sardines, are commonly imported due to their affordability and high market demand.

Figure 2. Mackerel Tuna

The importation of sea fish is facilitated either by physically visiting the source (Jakarta) or through telephone orders from marine fish producers (Surabaya, Sulawesi). Distribution to processing farmers, who are partners of these distributors scattered across various sub-districts in Bandung Regency, occurs through two main methods: 1) processing farmers visiting distributors, and 2) distributors sending consignments to groups of processing

farmers.

Figure 3. Sorting Fish Before Distribution

3.2 MARKET ANALYSIS AND MAPPING

3.2.1 Market Conditions

Marine fish distributors play a crucial role in supporting fish processing activities catering to a middle to lower market segment (Bagas, P.S 2013). The anticipated consumers and partners of these distributors are typically fish processing farmers with limited capital. The distribution network of marine fish spans various sub-districts around Bandung Regency, employing a sales system either at the distributor's location or by directly delivering to the processing farmers. In this context, the distributor serves as both a market guarantor and a vital raw material provider.

Figure 4. Fish Ready for Distribution

3.2.2 Market Opportunities

The market potential for marine fish distributors in Bandung Regency remains substantial. Currently, only two seafood distributors operate in Jelekong Sub-district, whereas the number of processing farmers stands at 738 households. This stark contrast indicates a considerable untapped market for marine fish distributors.

Annually, processing farmers in Bandung Regency generate 14,797,960 kg of processed fish, requiring a substantial supply of fresh and sea fish when considering depreciation and additives. Assuming half of this demand relies on sea fish, a weekly requirement of 154.145 tons necessitates eight cold storages, each with a capacity of 5m x 5m x2.8m, to meet the demand in Bandung Regency.

Figure 5. Fish Storage Boxes

3.2.3 Market Needs and Competitors

The market demand for marine fish from distributors ranges from 200 kg to 4 tons per day, scaling up in response to the demand for processed fish. However, the general volume of marine fish absorbed by processing farmers is detailed in Table 2. Competing businesses, such as Caringin Market and Gedebage Bandung, have endured in this industry, primarily due to their robust and reliable partnership networks along with substantial capital reserves.

Table 2. Volume of Seafood Absorbed by Processors in Bandung Regency

Consumer	Uptake Volume	Origin
Farmer-processors group	5 quintals/3 days	Ciganitri, Bojongsoang
Individuals	2 quintals/week	Ciparay, Majalaya, Pasirjambu, Rancaekek
Traditional market vendors	5-6 quintals/week	Caringin, Gedebage

3.2.4 Selling Price Condition

The procurement cost of fish from the source fluctuates between IDR 2,700 and IDR 15,000 per kilo. Notably, the selling price to farmer processors is IDR 1,000 higher than the purchase price. A detailed breakdown is provided in Table 3.

Table 3. Type and Price of Fish at Marine Fish Distributors

Type of Fish	Purchase Price (IDR)	Selling Price (IDR)
Skipjack tuna	7,800 - 10,000	8,800 - 11,000
Mackerel tuna	7,700 - 10,000	8,700 - 11,000
Sardines	2,700 - 3,500	3,800 - 4,500
Pacific mackerel	8,500 - 9,500	9,500 - 11,000
Decapterus sp.	7,500 - 8,000	8,500 - 9,000
Milkfish	7,500 - 8,000	8,500 - 9,000
Tuna	11,000 - 15,000	12,000 - 16,000

The storage duration for marine fish upon arrival is a maximum of 1.5 months. Beyond this period, a decline in quality occurs, necessitating a sale at 50% of the regular price. The market for these lower-quality fish is found in Garut, West Java typically priced between IDR 3,500 and IDR 4,000 per kilogram when received at the processing farmer's location. These degraded marine fish are commonly repurposed for animal feed and fish bait production.In the course of one year, marine fish distributors in Bandung Regency have managed to distribute 94.6 tons of fish, fulfilling only 1.3% of the local demand for marine fish. Optimizing the managerial aspects of fish distribution holds the potential to enhance market absorption, subsequently improving the overall function and efficiency of marine fish distributors.

Figure 6. Operational Vehicle for Marine Fish Distribution

3.3. Investment Opportunity

3.3.1 Business Feasibility Analysis

A. Investment

Investment is a critical aspect of establishing a successful marine fish distribution business. It encompasses various components crucial for operational efficiency and sustainability. The office building, priced at IDR 20,000,000, serves as the administrative hub, offering a centralized space for managerial tasks. Meanwhile, the cold storage facility, a significant investment at IDR 200,000,000, is designed to store up to 20 tons of marine fish, ensuring a continuous supply chain. The weighing scale, priced at IDR 500,000, plays a pivotal role in accurate measurement, an essential aspect of fair transactions. The two pushcarts, priced at IDR 250,000 each, provide a means of transporting fish efficiently. Additionally, 20 plastic baskets, each costing IDR 100,000, serve as containers for easy handling of fish. Finally, two pick-up vehicles, at IDR 45,000,000 each, are crucial for transportation, linking the distribution center with various sub-districts. Table 4 shows that the total investment needed is at IDR 313,000,000; with IDR 31,350,000 depreciation.

Table 4. Investment Cost for Marine Fish Distribution

Type	Quantity	Price (x IDR 1000)	Value (x IDR 1000)	Economic Life	Depreciation (x IDR 1.000)
Office building	1	20,000	20,000	20	1,000
Cold Storage Capacity 20 Tons	1	200,000	200,000	10	20,000
Weighing Scale	1	500	500	5	100
Pushcart	2	250	500	2	250

Plastic baskets	20	100	2,000	2	1,000
Pick-up vehicle	2	45,000	90,000	10	9,000
		Total	**313,000**		**31,350**

B. Fixed and Variable Costs

Managing fixed and variable costs is essential for the sustainable operation of the marine fish distribution business. The depreciation cost, amounting to IDR 31,350,000, accounts for the gradual reduction in the value of assets over time. Electricity, totalingIDR 1,700,000, is a recurring fixed cost crucial for the operation of facilities such as the cold storage. The expense for Freon, at IDR 600,000, contributes to maintaining the optimal temperature in the cold storage, preserving the quality of marine fish. Labor costs, including warehouse staff, drivers, administrative personnel, marketing, and managerial staff, amount to IDR 25,200,000, IDR 19,200,000, IDR 19,200,000, IDR 36,000,000, and IDR 24,000,000, respectively, forming a substantial portion of the total operating expenses. Table 5 shows thetotal fixed and variable costs of marine fish distributors is at IDR 271,950,000.

Table 5. Fixed and Variable Cost of Marine Fish Distributors

Type	Quantity	Price per-unit IDR)	Value (IDR/year)
Depreciation			31,350,000
Electricity		1,700,000	20,400,000
Freon		600,000	600,000
Labor			
- Warehouse	3	700,000	25,200,000
- Driver	2	800,000	19,200,000
- Administration	2	800,000	19,200,000
- Marketing	2	1,500,000	36,000,000
- Manager	1	2,000,000	24,000,000
Transportation	20,000 kg/week	100	96,000,000
		Total	271,950,000

C. Calculation of Annual Cost Benefits

Understanding the annual cost benefits is crucial for evaluating the financial viability of the business. The revenue, calculated at IDR 960,000,000, is derived from the production volume multiplied by the selling price. The resulting profit, amounting to IDR 688,050,000, is obtained by subtracting the total fixed and variable costs from the revenue. This profit becomes especially significant when considering that the cost of purchasing fish from the source is assumed to average IDR 10,000 per kilogram. Consequently, maintaining a working capital of IDR 800,000,000 per month or IDR 200,000,000 per week is imperative.

The Revenue/Cost (R/C) Ratio, calculated at 3.542, indicates a promising balance between revenue and costs. This ratio serves as a key financial metric, showcasing the potential for profitability. Additionally, the payback period, estimated at 0.46 years, signifies the duration required to recover the initial investment based on the generated net benefit. These financial indicators collectively offer insights into the robustness and efficiency of the proposed marine fish distribution business. The details of such is as follow:

1. Revenue (Production x Price)
   - For every kilogram of fish, the distributor gains a profit of IDR 1,000.
   - Revenue = 20,000/mg x 48 weeks x IDR 1,000
     = IDR 960,000,000

2. Profit

- Profit = IDR 960,000,000 – IDR 271,950,000

= IDR 688,050,000

- The cost of purchasing fish from the source is assumed to be an average of IDR 10,000 per kg. In one month, the distributor must have a working capital of IDR 800,000,000 or IDR 200,000,000 per week.

3. Analysis of Revenue and Cost Balance R/C Ratio

- R/C Ratio = IDR 960,000,000 / IDR 271,950,000
  = 3.542
- Payback period = Investment x 1 year / Net benefit
  = IDR 313,000,000 x 1 year / IDR 688,050,000
  = 0.46 years

3.3.2 Challenges and Resolutions

The progress of marine fish distributors in Baleendah Sub-district, Bandung Regency, is intricately tied to the substantial financial needs of a single business unit, making independent organization by distributor managers impractical. Addressing this challenge involves the provision of credit coupled with managerial training and technical guidance to pave the way for a viable solution. The investment initiative presents a lucrative opportunity for investors seeking strong returns and positive community impact. With a total initial investment of IDR 313 million, the project possess a projected annual profit of Rp 688 million and a rapid payback period of just 0.46 years. Few highlights from the investment potential described above were:

Strong Financial Fundamentals:

1) Low Operational Costs: Depreciation, electricity, and freon expenses are minimal, totaling only Rp 33.7 million annually.
2) High-Profit Margin: Each kilogram of fish sold generates a profit of Rp 1,000, leading to an estimated annual revenue of Rp 960 million.
3) Favorable R/C Ratio: The calculated R/C ratio of 3.542 demonstrates a significant return on investment, exceeding the breakeven point by over 3x.

Key Investment Highlights:

1) Essential Infrastructure: The project includes the purchase of a cold storage facility, office building, weighing scale, pushcarts, plastic baskets, and pick-up vehicles.
2) Skilled Workforce: A dedicated team of warehouse laborers, drivers, administrative staff, marketing personnel, and a manager ensures efficient operations.
3) Strategic Location: The Baleendah District location provides direct access to a reliable supply of marine fish and proximity to potential buyers.

Investing in this marine fish distributor is a chance to not only generate substantial financial returns but also contribute to the development of the local economy and empower salt-boiled fish processors in Bandung Regency, Indonesia

6. CONCLUSION

The activity of marine fish distributors in Bandung Regency has great prospects to be developed but is hampered by the large capital that must be spent by distributor entrepreneurs. For better implementation, government intervention is needed in terms of capital/investment accompanied by technical and managerial assistance aimed at fish distributor entrepreneurs in Bandung Regency, Indonesia.

REFERENCES

1. Azizah, Mahari & Dwi, Aprilia. 2021. Fishery Product Innovation Opportunities. Publisher: Forthisa Karya ISBN: 978-602-14628-9-8
2. Bagas, P.S. 2013. Analysis of the Distribution Chain of Marine Fishery Fish Commodities in Tegal City. Economics Development Analysis Journal. Vol 2, No(2)
3. Effendi, Irzal, and WawanOktariza. 2006. Fisheries Agribusiness Management. Jakarta: Self-Help Spreader
4. Komarudin, N. 2020. The Influence of Managerial Ability and Processor Behavior on the Productivity of Fishery Product Processors in West Bandung Regency. Aquatek Journal. Vol. 1, No.1, June 2020 : 27-4
5. Langi G.K.L, Irza N. Ranti, Olga L. Paruntu. 2011. Review of the Contribution of Fish Protein and Fat in Consumption Patterns and the Nutritional Status of Elementary School Children in Agricultural and Coastal Areas of South Minahasa Regency. JIK. Volume 5 No.2
6. Marwan, U. M., Wiryawan, B., & Lubis, E. (2013). Study of Fish Processing Industry Development Strategy in Palopo City, South Sulawesi Province. Journal of Fisheries and Marine Technology Vol. 4. No. 2, 197-209.
7. Templier, M., & Paré, G. (2015). “A framework for guiding and evaluating literature reviews” in Communications of the Association for Information Systems, 37(1), 6.
8. Veiga-Malta, Feekings, T., Herrmann, J., Krag, B., Ludfig, A. (2019) ‘Industry-led fishing gear development: Can it facilitate the process?’, Ocean and Coastal Management. Elsevier, 177(May), pp. 148–155. doi: 10.1016/j.ocecoaman.2019.05.009.
9. West Java Province Maritime and Fisheries Service. (2019). Capture Fisheries Statistics. West Java, Bandung.
10. Yolanda M.T.N Apituley, Eko S. Wiyono, Musa Hubeis, Victor P.H Nikijuluw. 2013. Functional and Institutional Approaches in Marketing Analysis of Fresh Fish in Central Maluku