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FEASIBILITY ANALYSIS OF SHRIMP PASTE PROCESSING BUSINESS IN TANJUNG PASIR VILLAGE, TANAH MERAH SUB-DISTRICT, INDRAGIRI HILIR REGENCY, RIAU PROVINCE

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ABSTRACT

The fishery product processing industry has become an important economic sector, especially in maritime countries like Indonesia. One processing business with great potential in Indonesia is rebon shrimp paste. The shrimp paste processing business has developed in Tanjung Pasir Village. The processor can produce shrimp paste with ±1,500kg/month of raw materials. This study aims to calculate the total investment, revenue, and profit and analyze the feasibility of the shrimp paste processing business in Tanjung Pasir Village. The survey method was used, and interviews were conducted with ten shrimp paste processing business owners. Data analysis used is an investment, revenue, profit, and business feasibility with Revenue Cost Ratio (RCR), Payback Period of Capital (PPC), and Financial Rate of Return (FRR) criteria. The results showed that the total investment of the shrimp paste processing business using a 6-bag corrugated net amounted to IDR 62,161,000, 3 bags to IDR 51,452,300, and two bags to IDR 48,028,750. Using a 6-bag corrugated net, gross revenue per year amounted to IDR 133,605,000, three bags to IDR 96,063,600, and 2 bags to IDR 72,206,250. Profit per year using a 6-bag corrugated net is IDR60,735,500, 3-bag is IDR 39,751,650, and 2-bag is IDR25,669,250. The RCR value of a shrimp paste processing business using a 6-bag corrugated net is 1.8, 3-bag is 1.7, and 2-bag is 1.6. PPC value for the 6-bag corrugated net for 1 year, 3-bag for 1 year, 4 months, and 2-bag for 1 year, 11 months. The FRR value for 6-bag corrugated net is 97.71%, 3-bag 77.26% and 2-bag 53.45%.

Keywords: Shrimp Paste, Investment, Revenue, Profit, Business Feasibility

1. INTRODUCTION

Indonesia is an archipelago with abundant coastal resources and marine products not shared by other countries. This sizeable marine wealth includes various types of fish, crustaceans, shellfish, and unicellular and multicellular algae. Marine wealth can be utilized in processed food with good shelf life and function[1]. The fisheries processing industry has become one of the most critical sectors of the economy, especially in maritime countries such as Indonesia. One of the processing businesses with great potential in Indonesia is shrimp paste, commonly used as a cooking ingredient to make food more delicious[2]. Processed shrimp paste, accompanied by management and marketing assistance, will be able to increase community income1. Therefore, most coastal communities rely on marine products as their livelihood.

Terasi is one of the fermented products of rebon shrimp that only undergoes salting treatment and is left for a while so that the fermentation process occurs[3]. Making shrimp paste is still in the fisheries sector, which has the most significant influence on providing food products that have nutritional value based on animal sources to meet the community's dietary needs. Terasi has a high

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nutritional value, including fat, carbohydrates, protein, calcium, phosphorus, iron, and water[4].

Indragiri Hilir is one of the districts with considerable fisheries potential in Riau Province. A river stretches Indragiri Hilir with a length of ±415 km that crosses several regions in Riau Province and has the potential to include marine fisheries, freshwater aquaculture, marine fish farming, and shrimp ponds[5]. The potential of capture fisheries in Indragiri Hilir Regency is enormous; in 2021, the potential of capture fisheries is 53,057.13 tons. Several sub-districts in Indragiri Hilir have vast potential for marine fisheries, including Tanah Merah, Concong, Mandah, Kuala Indragiri, Kateman, Sungai Batang, Reteh, Burung Island, Gaung Anak Serka, Gaung. The Tanah Merah sub-district has excellent potential in marine fisheries and public waters, producing 8,855 tons in marine fishing and 3,331 tons in public waters in 20216.

Tanjung Pasir Village is one of the villages in Tanah Merah Sub-district, Indragiri Hilir Regency. The village is located opposite Kuala Enok, about 10 minutes away by boat. The town is inhabited by people who primarily work as fishermen from various ethnic groups (the majority are the Duanu tribe). The shrimp paste processing business is a small and medium-scale business operating in Tanjung Pasir Village for a long time. The shrimp paste processing business is still traditional. Marketing shrimp paste in Tanjung Pasir Village is straightforward because it has been run for a long time, so producers already have regular buyers to buy shrimp paste products produced[5].

Generally, the shrimp paste business in Tanjung Pasir Village uses rebon shrimp as raw material. Rebon shrimp is a food ingredient that quickly decays, so processing and preservation are needed to maintain the quality of products produced by fishermen to reach consumers in good condition and are suitable for eating[7]. The raw material of rebon shrimp is one of the critical components in management activities to produce production; shrimp paste in Tanjung Pasir Village is a shrimp paste that is made without using coloring ingredients. This terasi is processed using raw raw materials such as rebon shrimp and salt. The processor can produce shrimp paste with ±1,500kg/month of raw materials. The raw material will be ready to be consumed as much as half of the raw material used. The processed shrimp paste is then marketed in Indragiri Hilir Regency and outside Indragiri Hilir Regency, such as Bangka Belitung.

The amount of production in the shrimp paste processing business in Tanjung Pasir Village varies. This is influenced by the amount of fishing gear owned by various shrimp paste processing business owners. Each business owner has a different number of fishing gear bags; some have six, three, and two bags. This is a problem where the number of bags owned causes a variety of catches obtained, so the amount of production also varies.

This case shows that the business feasibility analysis can be used to see the extent to which the shrimp paste processing business can be carried out so that the author knows whether the shrimp paste processing business in Tanjung Pasir Village is feasible. Therefore, the author is interested in conducting research titled "Feasibility Analysis of Terasi Processing Business in Tanjung Pasir Village, Tanah Merah District, Indragiri Hilir Regency, Riau Province."

2. RESEARCH METHOD

Time and Place

This research was conducted in February 2024 in Tanjung Pasir Village, Tanah Merah District, Indragiri Hilir Regency, Riau Province. Determining the research location was carried out purposively considering that this area is one of the places of production and processing of shrimp paste in Tanjung Pasir Village, Tanah Merah District, Indragiri Hilir Regency, Riau Province[8].

Method

The method used in this research is the survey method, namely by making direct observations of objects in the field and collecting data through direct interviews with business owners who make shrimp paste in Tanjung Pasir Village, Tanah Merah District, Indragiri Hilir Regency, guided by a structured list of questions and questionnaires[8].

The population in this study is people who own a shrimp paste processing business that produces self-captured raw materials. The population in this study amounted to 10 shrimp paste processing business owners who would be used as respondents, and the respondents were taken by census. According to Arikunto[9], the whole can be sampled if the subject is less than 100. Therefore, this study used the entire population as a sample because the number was less than 100.

Data Analysis

The data sources used are primary data and secondary data. Primary data is from direct observations in the field, taken from interviews with respondents using questions (questionnaires). Primary data collected includes fixed capital, working capital for procuring raw materials (rebon shrimp and salt), revenue, and fixed and non-fixed costs. At the same time, secondary data were obtained from agencies related to this research, such as the Indragiri Hilir Regency Fisheries Service and Indragiri Hilir BPS, as well as literature related to shrimp paste processing [8].

3. RESULT AND DISCUSSION

Terasi Processing Business

The fishing fleet in Tanjung Pasir Village is a motorboat that uses an engine as its driving force, which is used as a means of transportation for operating wave net fishing gear and landing the catch. The motorboat fishermen use 3 GT, while the engine power is 24 PK. Engine power affects the fishing area; the more significant the engine power, the farther the fishing area.

Wave net is a fishing gear fishermen use to catch rebon shrimp, especially in coastal and estuarine waters. It has very small meshes, measuring only 2 mm, which makes it potentially non-selective in terms of the size and type of fish caught. Wave nets are operated based on tidal currents, with installation ensuring the wings and mouth of the net are fully open. Weights are placed on the lower riffle rope and float on the upper rope, allowing the net to reverse direction when the current changes. Wave nets function when the current is strong, i.e., the water starts to rise or recede until the current weakens again. This net generally operates in coastal waters and river estuaries to catch rebon[10]. In Tanjung Pasir Village, the variation in the number of bags in the waving net reflects the limited capital of the shrimp paste processing business owners, with most having 2 or 3 bags and only one person having six bags.

Labour is everyone who can do work to produce goods or services, both to meet their own needs and the needs of others. The workforce in the shrimp paste processing business activities is two people for workers who capture raw materials and 1-3 people for workers who process shrimp paste. The labour wage given by the shrimp paste processing business owner to the catching labour is 2,500/kg, and the shrimp paste processing labour is 3,000/kg.

Catching rebon shrimp using wave nets in Tanjung Pasir Village begins with preparations that include checking fishing gear, boats, engines, and supplies, which are very important for the smooth running of fishing activities. Fishing occurs from 6 am to 12 pm, with 6 hours of daily operation. Wave nets, semi-permanently installed against the direction of the tide and ebb current, are operated throughout the year by making 18 monthly trips, except during the 12 days of dead tide when activities are reduced for repair and preparation. During 9 months, the drift nets are actively used for catching, while 3 months are suspended due to adverse weather conditions during the north wind season, which brings heavy rains

and strong winds. After seeing the raw material of rebon shrimp, it is processed into shrimp paste in Tanjung Pasir Village, where it is done effectively using a grinding machine.

The types of catches obtained from gombang nets are rebon shrimp, lomek fish, duri fish, and other small fish species. The main catch or target of the Gombang net is rebon shrimp, while the bycatch is only around 10% of the main catch. The peak season cycle of rebon shrimp occurs for 6 months in March, April, May, June, July, and August, and the off-season occurs for 3 months in September, October, and November. Rebon shrimp itself is utilized as raw material for making shrimp paste. Data on the catch of rebon shrimp in Tanjung Pasir Village can be seen in Table 1.

Table 1. The average catch of gombang nets in Tanjung Pasir Village

Number of	Season (kg)			off-season(kg)		
Wave Nets	Trip	Month	Year	Trip	Month	Year
6 Pouch	80	1.440	8.640	55	990	2.970
3 Pouch	61	1.094	6.566	37	670	2.009
2 Pouch	47	837	5.022	26	464	1.391

Table 2. Average production yield of Terasi in Tanjung Pasir Village

Number of	Season (kg)			off-season(kg)		
Wave Nets	Week	Month	Year	Week	Month	Year
6 Pouch	150	600	3.600	105	420	1.260
3 Pouch	113	452	2.712	67	266	799
2 Pouch	87	349	2.094	46	185	555

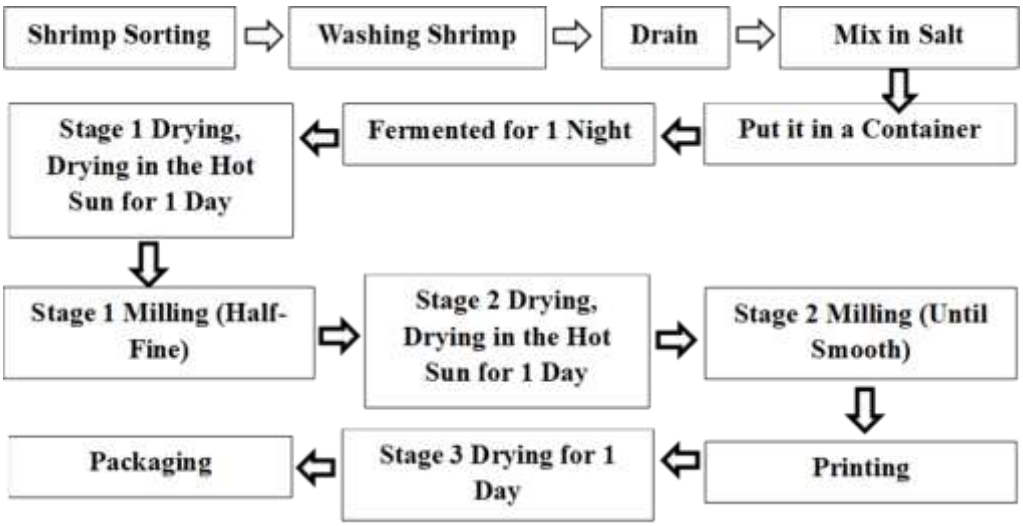

Figure 1. Making shrimp paste

Based on Table 1, the catch in the waving net with six bags during the season was 80 kg/trip, and during the off-season was 55 kg/trip, while for the waving net with three bags during the season, the average was 61 kg/trip and during the off-season, the average was 37 kg/trip and for the waving net with two bags during the season, the average was 47 kg/trip and during the off-season the average was 26 kg/trip. The catch per month is generated from the results per trip multiplied by the number per trip, which is 18. The catch per year is generated from the monthly catch multiplied by the season and off-season, where the season occurs for 6 months/year, and the off-season occurs for 3 months/year.

Based on Table 2, terasi processing is done once a week. It can be seen in Table 2 for business owners who have a 6-bag corrugated net in a week producing as much as 150 kg/week, for business owners who have a 3-bag corrugated net in a week producing as much as 113 kg/week, and for business owners who have a 2-bag corrugated net producing as much as 87 kg/week. The yield of shrimp paste processing per month is obtained from the weekly yield multiplied by four times the monthly processing. For per year, the results per month are multiplied by the season and off-season, where the season occurs for 6 months/year, and the off-season occurs for 3 months/year (Figure 1).

Investment

Investment is the investment or placement of several funds in production facilities and fisheries businesses to increase production capacity and gain profits in the future[11]. The investment required in the shrimp paste processing business is divided into two parts: investment in raw material capture and investment in shrimp paste processing.

Fixed capital is company property that is permanent, tangible, and used to support the company's overall operations. It has a useful life of more than one year[12]. Fixed capital in raw material capture includes motorboats or boats along with engines and net fishing gear, while fixed capital in shrimp paste processing contains raw material, processed product storage warehouses, and production equipment[13]. Fixed capital incurred by shrimp paste processing business owners who use corrugated nets with six bags for fishing amounted to IDR 54,000,000 and for processing IDR 7,262,000, while those who use corrugated nets with three bags for fishing amounted to IDR 44,000,000 and for processing IDR 6,755,000, and those who use corrugated nets with two bags for fishing amounted to IDR 41,000,000 and for processing IDR 6,472,000.

Working capital is funds used or issued to finance daily operations. Working capital in capturing raw materials includes fuel, consumption, and labour wages, while working capital in shrimp paste processing includes salt, fuel, labour wages, and plastic packaging. The working capital for capturing raw materials in the shrimp paste processing business using a corrugated net with six bags amounted to IDR 291,000, those using a corrugated net with three bags amounted to IDR 231,300, and those using a corrugated net with two bags amounted to IDR 194,250. While the working capital of shrimp paste processing using corrugated nets with six bags amounted to IDR 608,000, corrugated nets with three bags amounted to IDR 466,000, and those using corrugated nets with two bags amounted to IDR 362,500.

Investment incurred by shrimp paste processing business owners consists of fixed capital for capturing raw materials and fixed capital for processing shrimp paste, then working capital for capturing raw materials and working capital for processing shrimp paste. The investment of the shrimp paste processing business that uses a 6-bag corrugated net is IDR 62,161,000, while the one using a 3-bag corrugated net is IDR 51,452,300, and the one using a 2-bag corrugated net is IDR 48,028,750.

Revenue and Profit

The gross income of the shrimp paste processing business is the multiplication of the number of processed shrimp paste products produced by the selling price of these products in the market. Revenue is the gross income obtained before deducting the costs incurred during the production process[14]. The gross income component includes the price of shrimp paste and the price of bycatch. Using a 6-bag corrugated net, gross income per year was IDR 133,605,000; a 3-bag corrugated net was IDR 96,063,600; and a 2-bag corrugated net was IDR 72,206,250.

Cost is defined broadly as a sacrifice of economic resources, which can be

measured in units of money, which has occurred or may occur for a specific purpose[14]. The shrimp paste processing business consists of fixed costs and non-fixed costs. Fixed costs consist of depreciation and maintenance costs. Fixed costs per year using 6-bag corrugated nets amounted to IDR 10,731,000, 3-bag corrugated nets amounted to IDR 8,339,500, and 2-bag corrugated nets amounted to IDR 7,538,500.

Non-fixed costs are costs incurred variably, and the changes are parallel to the volume of production[15]. Non-fixed costs include fuel, consumption, labour, salt, and plastic packaging. Non-fixed costs per year using 6-bag corrugated nets amounted to IDR 63,579,000, 3-bag corrugated nets amounted to IDR 48,958,200, and 2-bag corrugated nets amounted to IDR 39,830,250.

Total cost is the sum of all costs, including fixed and non-fixed costs incurred by the shrimp paste processing business owner. The total cost per year using a 6-bag corrugated net is IDR 72,869,500, a 3-bag corrugated net is IDR 56,311,950, and a 2-bag corrugated net is IDR 46,537,000.

Profit is the difference between income and expenses in one cycle of business activities. Profit is obtained if the value of revenue from selling processed fish products is greater than the costs incurred during the production process[16]. Calculating profit is necessary to know the expenses incurred in the shrimp paste processing business.

The profit is obtained from the gross income minus the total costs incurred by the shrimp paste processing business owner as the owner of the business capital. The profit per year using a 6-bag corrugated net is IDR 60,735,500, a 3-bag corrugated net is IDR 39,751,650, and a 2-bag corrugated net is IDR 25,669,250. In 1 kg of shrimp paste production, the cost incurred by shrimp paste processing businesses using 6-bag corrugated nets is IDR 14,994/kg, 3-bag corrugated nets is IDR 16,039/kg and 2-bag corrugated nets is IDR 17,568/kg. Meanwhile, for 1 kg of fresh rebon shrimp raw material, the cost incurred by the 6-bag corrugated net is IDR 4,413/kg, the 3-bag corrugated net is IDR 4,663/kg, and the 2-bag corrugated net is IDR 5,271/kg. The catch is cheaper than fresh rebon shrimp raw materials from fishermen, around IDR 8,000/kg.

Business Feasibility

The business feasibility analysis in this study uses investment criteria, namely Revenue Cost Ratio (RCR), Payback Period of Capital (PPC), and Financial Rate of Return (FRR). A business feasibility study is an activity that studies a business or business to be run in depth to determine whether or not the business is feasible[17].

Revenue Cost Ratio (RCR) is a comparison between revenue and costs. This analysis looks at the feasibility of a business that can be calculated by comparing total revenue with total costs. If RCR > 1, then the business is said to be feasible to run; if RCR < 1, then the business is not practicable to run[18]. Based on the study's results, the shrimp paste processing business using 6, 3, and 2 bag nets has an RCR value of more than 1, making the business feasible to continue.

Payback Period of Capital (PPC) is an assessment technique for the period of return on investment in a project or business. Payback period analysis is calculated by calculating the time required when the total cash inflow equals the total cash outflow[19]. The faster the return, the better it is to try. The results showed that the payback period of the shrimp paste processing business using a 6-bag corrugated net was 1 year, three bags for 1 year and 4 months, and two bags for 1 year and 11 months.

The Financial Rate of Return (FRR) is the profit percentage compared with the total investment invested. This analysis is used to determine the efficiency of capital use in business[20]. If the FRR value exceeds the deposit interest rate, it is better to invest in the business. Otherwise, if the FRR value is smaller than the deposit interest rate, it is

better not to invest in the business. Based on the research results, the FRR value of the shrimp paste processing business using a 6-bag corrugated net is 97.71%, three bags is 77.26%, and two bags is 53.45%. The FRR value of the shrimp paste processing business is greater than the deposit interest rate prevailing in the bank, which is 3% for 12 months, issued by BRI bank in April 2024. This indicates that investment should be made in the shrimp paste processing business in Tanjung Pasir Village.

Overall, the shrimp paste processing business in Tanjung Pasir Village is feasible to continue and develop, as seen from the RCR value of more than 1, the fast return on capital seen from the PPC value, and the FRR value more significant than the deposit interest rate. This is in line with research conducted by Grasia et al.[20]; Togatorop et al.[18,] which state that the RCR, PPC, and FRR criteria can be used to assess the feasibility of a fishing business.

To increase production and income, it is suggested that it is necessary to increase the number of bags of gombang fishing gear used to catch rebon shrimp raw materials to improve the processed shrimp paste in Tanjung Pasir Village and provide assistance by the government so that it can help fishermen or shrimp paste processing business owners in carrying out shrimp paste processing business activities to be optimal.

4. CONCLUSION

The feasibility of shrimp paste processing business for the RCR value in the shrimp paste processing business using corrugated nets with six bags, three bags, and two bags is 1.8, 1.7, and 1.6, respectively, which means that the business is feasible to continue or develop in the future. For the PPC value in the shrimp paste processing business, six bags, three bags, and two bags of corrugated nets were used in order, namely 1 year, 1 year, 4 months, and 1 year, 11 months. For the FRR value in the shrimp paste processing business using corrugated nets with six bags, three bags, and two bags in order, namely 97.71%, 77.26%, and 53.45%, which means that investment should be made in the business.

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