Business Analysis of Fish Sauce from Goldspotted Anchovy (*Coilia dussumieri*) in Bagansiapiapi, Riau Province

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**Abstract.** A fishery business that will be run by an entrepreneur must generate sustainable profits. Therefore it is necessary to perform business analysis. Business analysis is a method used to determine the feasibility of a business. Business analysis in a fishery product processing is needed because of the great uncertainty. The most influencing factor is the fishing season. This study aims to determine the advantages or disadvantages of a business, the relative advantage of the costs used in a year, the rate of return on investment, the production value limit to break even in the processing of fish sauce in Bagan-Siapiapi, Riau Province. The method applied in this study was a survey method by performing a direct observation in the field. Data analysis was conducted by analyzing financial calculations using several criteria, namely profit and loss analysis (R/L), Revenue Cost Ratio (R/C), Payback Period (PP), Break Event Point (BEP) of production and price. The results showed that the total cost required in making fish sauce is Rp. 15,702,000.00 with the annual profit of Rp. 92,823,000.00. The value of R/C is 2.99 with obtained PP 0.02. BEP of production was obtained at 11.672/pack and BEP of price was Rp. 64,847/pack. Based on the several criteria, it can be concluded that the business of processing fish sauce from goldspotted anchovy is feasible to be developed and continued.

Key words: Business analysis; feasible; fish sauce

1. **Introduction**

Goldspotted anchovy is one of the fishery commodities that are often found in the Bagansiaipi-api area. According to data from the Rokan Hilir Regency Fisheries Service in 2000-2003, the productivity of marine caught fish was around 70,000 tons per year. Goldspotted anchovy has elongated body characteristics such as a cigar, blunt muzzle and a shorter lower jaw than the upper jaw. It’s presented in Figure 1. The use of goldspotted anchovy is still not optimal in the Bagansiapi api area because of its low economic value and has not been used properly by the local community so that in the future this goldspotted anchovy still needs further management to get optimal results.
Fish sauce is a fermented product in the form of a dark brown liquid that tastes relatively salty or sweet and smells good. Fish sauce is usually made from vegetable and animal protein sources both acidically and enzymatically [1]. Fish sauce is a traditional fishery product that is processed by fermentation and has been known for a long time.

The factors that support the success of making fish sauce are the selection of raw materials and an appropriate starter. An appropriate starter for fish sauce fermentation is useful for shortening the fermentation time of fish sauce. The raw material used is fresh fish, while all types of fish can be used. The use of fish with low economic value can be applied in making fish sauce to increase the economic value of the fish. Besides fish sauce with ingredients raw with high protein will produce high quality fish sauce [2].

A fishery business that will be run by an entrepreneur must generate a sustainable profit. For that, one of the steps that must be taken is to conduct a business analysis. Business analysis in the fisheries processing sector is a financial examination to determine the level of success that has been achieved during the fishery business. With business analysis, entrepreneurs can make calculations and determine actions to improve and increase profits in their business [3]. The purpose of this research was to determine the level of profit or loss of a business, the profit relative to the costs used in one year, the rate of return on investment, the limit of production value or production volume to achieve a condition where the business does not experience a profit nor a loss in making fish sauce from Chicken Feather fish in Bagansiapiapi, Rokan Hilir Regency, Riau Province.

2. Methods

2.1. Location and Time of Research
This research was carried out in May 2020 in Bagansiapiapi, Rokan Hilir district, Riau Province. Bagansiapiapi is a center for the production of fish sauce, which is the main reason it was chosen as the research location, so this research is directed at case studies.

2.2. Materials
This study employed observation sheets, questionnaires and the annual report of the Rokan Hilir Regency Fisheries Service.

2.3. Research Methods
The method used in this research was a survey method, namely by making direct observations in the field. The data collected was composed of primary and secondary data. Primary data were collected from respondents using a questionnaire sheet that had been prepared beforehand, while secondary data was collected from agencies related to the research topic.

2.3.1. Data analysis
Data analysis to determine the feasibility of a business was carried out by financial analysis using the criteria R/L, R/C, PP, BEP price and BEP product.
2.3.2. Loss / Profit Analysis
Loss / profit analysis is an analysis tool to determine the amount of profit / loss in a managed business, which can be calculated using the formula:

\[
\text{Profit} = \text{Receipts} - \text{Total Cost}
\]  

(1)

2.3.3. Revenue Cost Ratio (R / C)
R / C is an analytical tool to see the relative advantages in 1 year to the costs incurred. A business is said to be feasible if R / C is greater than 1 (R / C > 1), can be calculated with the formula [4]:

\[
\frac{R}{C} = \frac{\text{Total Receipts}}{\text{Total Cost}}
\]  

(2)

where:
R = Return Cost Ratio;
R = Total revenue (IDR);
C = Total production costs, with the following criteria:
RCR > 1 : Every one rupiah issued produces a large gross revenue of one rupiah, which means that it is profitable and feasible to continue;
RCR = 1 : Every one rupiah issued produces one rupiah gross revenue, meaning that it is at the break-even point (return on investment);
RCR < 1 : Every one rupiah spent generates a small amount of revenue from one rupiah, it means experiencing a loss and is not feasible to continue.

2.3.4. Payback Period (PP)
PP is an analysis tool to determine the rate of return on investment that has been spent on a business, it can be calculated by the formula:

\[
\text{PP} = \frac{\text{Total Investment}}{\text{Revenue}}
\]  

(3)

2.3.5. Break Event Point (BEP)
BEP is an analytical tool to determine the limit of the initial production value or production volume of a business to break even or a condition where the company does not experience profit / loss. The break-even point analysis can be divided into two [5], namely the breakeven point in sales units and the breakeven point in production units (total production). Sales at the break-even point are the sales proceeds obtained by the company to be able to cover operational costs incurred by the company, which can be calculated using the formula:

\[
\text{BEP Production} = \frac{\text{Total Cost}}{\text{Selling Price}}
\]  

(4)

\[
\text{BEP Price} = \frac{\text{Total Cost}}{\text{Total Production}}
\]  

(5)

2.4. Operating costs
Operational costs are costs that must be incurred by the fish sauce producer during the production process [6]. Operating costs are often referred to as working capital, which consists of fixed costs (Fix Cost) and variable costs (Variable Cost). Production process of fish sauce lasts for 8-10 days, starting from material preparation activities and tools to packaging and sales activities. In one month there are 3
times the production process, thus one production cycle lasts 8-10 days. Fixed costs are costs that in totality cannot change even if there is a change in production volume. Even though there is a change in production volume, the amount of cost remains unchanged, in other words, it remains the same in one year. Fixed costs in the business of making chicken feather fish sauce include labor costs (wages, electricity costs, equipment depreciation costs).

3. Results
Bagansiapiapi is the capital of a district which is known as the land of a thousand domes. Unlike the rest of the area in Riau, Rokan Hilir has a lot of buildings with domes although it is not a mosque. Bagansiapiapi is located on the edge of the sea, to be exact, the Malacca Strait was once known as a fish producer. Bagansiapiapi is the second largest fish-producing city after the city of Bergen in Norway. Even though it no longer holds the title, the fishery sector is still felt in this city. This is because the coast around Bagansiapiapi is shallow and narrow by silt sediment carried by the Rokan river water.

The business of producing fish sauce is a new type of business being undertaken by the people of Bagansiapiapi. This business has only been running for a few years. Knowledge and skills in processing fish sauce were obtained from family, relatives, electronic media and counseling conducted by the local government, in this case the Rokan Hilir Regency Fisheries Service. Packaged fish sauce is depicted in Figure 2.

![Figure 2. Packaged fish sauce.](image)

The raw materials needed in making fish sauce are easy to obtain and reach so that with the availability of these raw materials the production process can run smoothly [7]. Raw materials in the form of chicken fish can be obtained directly from local fishermen. Fish sauce produced by fish sauce processors in Bagansiapiapi has 2 packages, namely packaged in packs and packaged in bottles. Fish sauce price per pack (50 ml) ranged from Rp. 5,000/unit and fish sauce per bottle (350 ml) ranged Rp.27,000/unit.

3.1. Investment Costs
The investment cost in the fish sauce-making business was the cost that must be incurred by a fish sauce producer to start the business. The investment cost for the fish sauce-making business comes from your own or personal capital. The need for investment costs for the business of making fish sauce can be seen in Table 1 below:
Table 1. Investment costs for making fish sauce.

| No. | Tool       | Amount | Price/unit | Amount | Durability (year) | Depreciation/year |
|-----|------------|--------|------------|--------|-------------------|-------------------|
| 1   | Fiber      | 1      | 900,000.00 | 900,000.00 | 10                | 90,000.00         |
| 2   | Filter     | 3      | 15,000.00  | 45,000.00 | 1                 | 45,000.00         |
| 3   | Blender    | 2      | 300,000.00 | 600,000.00 | 5                 | 120,000.00        |
| 4   | Rubber     | 4      | 5,000.00   | 20,000.00 | 1                 | 20,000.00         |
| 5   | Knife      | 2      | 20,000.00  | 40,000.00 | 5                 | 8,000.00          |
| 6   | Bucket     | 3      | 20,000.00  | 60,000.00 | 5                 | 12,000.00         |
| 7   | Spoon      | 2      | 15,000.00  | 30,000.00 | 5                 | 6,000.00          |
| 8   | Cooking utensil | 1  | 40,000.00  | 40,000.00 | 5                 | 8,000.00          |
| 9   | Funnel     | 4      | 5,000.00   | 20,000.00 | 1                 | 20,000.00         |
| 10  | Stove      | 1      | 240,000.00 | 240,000.00 | 5                 | 48,000.00         |
|     | **Total**  |        | **1,995,000.00** |        |                   | **377,000.00**    |

3.2 Operational cost

Operational costs are costs that must be incurred by the fish sauce processor during the production process. Operating costs are often referred to as working capital, which consists of fixed costs and variable costs[8]. Fish sauce production lasts for 8-10 days, starting from the preparation of materials and tools to packaging and sales activities. The production process is carried out 3 times a month, so in one production cycle it lasts 8-10 days.

The fixed cost description is a cost which in totality cannot change even though there is a change in production volume. Even though there is a change in production volume, the amount of cost remains unchanged, in other words, it remains the same in one year [9]. Fixed costs are presented in Table 2.

Table 2. Total fixed costs.

| No. | Fixed Cost       | Every Month | Year         |
|-----|------------------|-------------|--------------|
| 1   | Employee salary  | 1,200,000.00| 14,400,000.00|
| 2   | Electricity cost | 27,083.33   | 325,000.00   |
| 3   | Depreciation     | -           | 377,000.00   |
| 4   | Marketing        | 50,000.00   | 600,000.00   |
|     | **Total**        |             | **15,702,000.00** |

Total fixed costs are obtained based on the sum of employee salaries, electricity costs, depreciation and marketing. Fixed costs are costs that will be incurred regularly during each month so that they are accumulated for a year, namely Rp. 15,702,000.00. Fixed costs in fish sauce business include labor costs (wages, electricity costs, equipment depreciation costs). Other cost that must be calculated are variable cost. Variable costs are costs that are used up or are considered to be used up in one production period or costs whose amount varies according to the size of the production produced. Variable cost is attached in Table 3.
Table 3. Variable costs.

| No. | Variable costs | Amount | Price     | 1 Month   | 1 Year      |
|-----|----------------|--------|-----------|-----------|-------------|
| 1   | Fish           | 100    | 5,000.00  | 500,000.00| 6,000,000.00|
| 2   | Pineapple      | 100    | 2,750.00  | 275,000.00| 3,300,000.00|
| 3   | Bottle         | 300    | 2,000.00  | 600,000.00| 7,200,000.00|
| 4   | Label          | 300    | 600.00    | 180,000.00| 2,160,000.00|
| 5   | Plastic        | 900    | 1,000.00  | 900,000.00| 10,800,000.00|
| 6   | Brown sugar    | 30     | 20,000.00 | 600,000.00| 7,200,000.00|
| 7   | Gas            | 2      | 25,000.00 | 50,000.00  | 600,000.00  |
| 8   | Seasonings     | 1      | 50,000.00 | 50,000.00  | 600,000.00  |
| 9   | Box            | 50     | 8,000.00  | 400,000.00 | 4,800,000.00|
|     | Total          |        |           | 3,555,000.00| 42,660,000.00|

Variable cost always fluctuate depending on quality of the product produced [10]. The variable cost in fish sauce business include fish, pineapple, bottles, labels, plastics, palm, sugar, gas, seasoning and cardboard. The total variable cost needed in a month is Rp. 3,555,000.00 and in one year it takes Rp. 42,660,000.00.

Table 4. Details of fish sauce business revenues

| No. | Reception    | Packaging | Unit | Price     | 1 Month   | 1 Year      |
|-----|--------------|-----------|------|-----------|-----------|-------------|
| 1   | Fish sauce   | 50 ml     | 900  | 5,000.00  | 4,500,000.00| 54,000,000.00|
| 2   | Fish sauce   | 350 ml    | 300  | 27,000.00 | 8,100,000.00| 97,200,000.00|
|     | Total        |           |      |           | 1200      | 151,200,000.00|

The revenue obtained by this business is divided into 2 types of packaging, namely the value of receipt of package 1 (50 ml) and package 2 (350 ml in bottle). The first pack has a price Rp. 5,000.00 sold 900 units in one month. The proceeds of the receipt of Rp. 4,500,000.00 and in one year will receive Rp. 54,000,000.00. Meanwhile, the second pack is sold at a price of Rp. 27,000.00 as many as 300 units. It produces Rp. 8,100,000.00 in one month, while for 1 year its Rp. 97,200,000.00. The total revenue earned in the fish sauce business is Rp. 12,600,000.00 in one month and Rp. 151,200,000.00 for one year.

3.3 Loss/profit analysis

The calculation of this analysis is presented below:

\[
\text{Profit} = \text{Receipts} - \text{Total Cost}
\]

\[
= 151,200,000.00 - 58,362,000.00
\]

\[
= 92,838,000.00
\]

The results above indicate that fish sauce business in one year will generate a profit Rp. 92,838,000.00. This shows that the fish sauce business has promising prospects. The hope is that it can improve the welfare of the people in the area.
3.4 R/C Ratio (RCR)
The calculation of this analysis is presented below:

\[
R/C = \frac{\text{Total Receipts}}{\text{Total Cost}}
\]

\[
R/C = \frac{151,200,000,000}{58,362,000,000}
\]

\[
R/C = 2.59
\]

Based on the calculation above, the calculation of the R/C ratio for this fish sauce business is declared feasible. The reason is that the R/C value is greater than 1, which is 2.59. This means that every Rp. 1,000.00 production costs incurred will get 2.59 income with a profit of 1.59. This shows that the R/C value obtained is very feasible because the value reaches 2.59, meaning that the business gets a large enough profit so that this business is very feasible to be developed into the field.

3.5 Payback Period (PP)
The calculation of this analysis is presented below:

\[
PP = \frac{\text{Total Investment}}{\text{Net Profit}}
\]

\[
PP = \frac{1,995,000}{92,838,000}
\]

\[
PP = 0.02
\]

The results of the PP analysis illustrate that all investment in the fish sauce business will return within 0.02 years or 7.2 months. Cumulative cash flows are the same as the amount of investment in the form of present value. This means that this business is very promising because this business can return capital in a fast time. The faster the return on investment costs, the better the business is run. because the turnover of capital is considered.

3.6 Break Event Point (BEP)
The calculation of this analysis is presented below:

\[
\text{BEP Production} = \frac{\text{Total cost}}{\text{Sales Price}}
\]

Pack 1 (Wrap) = \[
\frac{58,362,000,000}{5,000,00}
\]

= 11.672 packs

Pack 2 (Bottle) = \[
\frac{58,362,000,000}{27,000,00}
\]

= 2.161 packs

\[
\text{BEP Price} = \frac{\text{Total cost}}{\text{Sales Production}}
\]

Pack 1 (Wrap) = \[
\frac{58,362,000,000}{900}
\]

= Rp. 64,846.67

Pack 2 (Bottle) = \[
\frac{58,362,000,000}{300}
\]

= Rp. 194,54
BEP production of first packaged fish sauce (wrap) was 11.672 packs. This means that BEP or the condition of the company being not profitable or not losing will be achieved at the time of business production of 11.162 packs. Meanwhile, BEP price is Rp. 64,846,67 indicates that the break-even point or the condition of the company not to gain or not to lose will be achieved when the selling price of fish sauce is Rp. 64,846,67.

The BEP Production of bottled fish sauce production is 2.161 packs indicates that the break-even point or the condition of the company not to gain or not to lose will be achieved at the time of business production is 2.161 packs. Meanwhile, the BEP price is Rp. 194,54 shows that the break-even point or the condition of the company not making a profit or not losing will be achieved when the selling price of fish sauce is Rp. 194,54.

The results of the analysis show that this business is quite good and feasible to develop, because this business can break even not too long so that the profits obtained can still cover all costs incurred by the entrepreneur Project development is not feasible because the company is unable to cover all costs in a relatively long time. Conversely, for entrepreneurs who have funds / capital in the number of principal points, but the project is feasible in the long term, maybe this business selection is one of the right alternatives in investing.

4. Conclusions
Fish sauce processing business has been conducted by people in the village Bagansiapiapi has a good prospect to be developed in the future. This venture is financially feasible and generated a profit by Rp. 92,838,000.00/year. Then the R/C value is 2.59 means that the business is very feasible to be developed. The PP value is 0.02. BEP production is 11.672 packs and BEP price Rp. 64,846,00. Therefore, it can be concluded that the business of making fish sauce is very feasible to be developed.

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