Strategy for the Development of Small Industry Smoking Roa Fish (*Hemiramphus sp.*) in Boalemo District, Gorontalo Province

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Abstract

About 95% of the demand for smoked Roa fish in the province of Gorontalo comes from outside the region. The Roa fish smoking industry provides the remaining 5% in Boalemo Regency. These conditions are affected by the lack of production capacity, production facilities, and capital owned by small businesses. This study aims to analyze the current needs of the small-scale Roa smoking industry, conduct financial feasibility analysis, and formulate a development strategy for the small-scale Roa fish smoking industry. The research method used was qualitative and quantitative research with data collection techniques in interviews, documentation, and SWOT analysis. The feasibility of the Roa smoking industry was determined through the NPV, IRR, BCR, PP, and BEP values. Based on the results obtained from SWOT analysis, it was found that the strength-opportunity strategy had the highest score. Policies to support this development strategy are creating brands and labels, improving cooperative relationships with existing partners and networks, and taking advantage of the abundant availability of raw materials to increase production capacity. In addition, it was also found that the lack of processing facility can be overcome and develop diversification or through assistance from the government or other agencies. It was also found that diversification of processed products derived from smoked Roa fish can become an important strategy. Other significant findings from this study were the demands for the product were high, and the industry could not keep up with the needs, the Roa smoking industry is investment-worthy, and the right strategy to develop this industry should be based on the Strength-Opportunity strategy.

**Keywords:** Strategy, Industry, Financial, SWOT, Roa Fish.

A. INTRODUCTION

Boalemo is one of the districts in Gorontalo Province, which has relatively large fishery resources. The geographical location of Boalemo Regency, which is in the coastal area, the potential area of marine and fisheries waters of 12,349 km² and the
number of residents who work as fishermen as many as 5013 people are one of the supporting factors for the economy in this area. Fishery development has been carried out from year to year. One of the main focuses of fishers in the capture fisheries business in Boalemo district is the utilization of julung-julung fish (*Hemiramphus sp.*). The market potential for smoked roa fish (*Hemiramphus sp.*) In Gorontalo Province is 64,410 clips/month, the market opportunities that are still available and cannot be fulfilled by smoked roa fish producers are 23,700 clips/month (Syariah & Asruddin, 2018). However, it is difficult for the small roa fish smoking industry in Boalemo district to meet this opportunity. This is due to a lack of production capacity, limited facilities and infrastructure and a lack of capital. Therefore, it needs attention from various parties to support the development of the tiny Roa smoked fish industry in Boalemo district so that the sector develops well and the market needs for smoked Roa fish can be met (Singh, Garg & Deshmukh, 2010).

Julung-julung fish (*Hemirampus sp.*) Are pelagic fish that live in coastal waters offshore and are only seen clustered around coral waters when spawning because these fish release eggs on fertile coral reefs and have natural food sources for both parents and Roa fry (Azis & Akolo, 2020). This fish also has a reasonably high vitamin content of around 500 to 1500 RAE / 100 grams and is thought to be used as a bio-indicator of freshwater quality (Botutihe, 2016).

The existence of julung-julung fish is a blessing in itself for people who work as fishermen. Julung-julung fish are caught using a purse seine fishing gear in the local language called pukat roa or tambak pukat (Moore & Marning, 2009). This fish is an essential commodity in Boalemo Regency; some people have been specifically hereditary to carry out Roa’s fishing and fumigation business, which local people call sagela fish (Syariah & Asruddin, 2018).

The process of smoking julung-julung fish takes days until it is cooked into smoked Roa fish. Roa fish sold in the market are generally packaged in a traditional way, which is clamped using wood or bamboo, which is known to the community as 'digepe'. The quality of Roa fish sold in the market has met quality standards following the organoleptic yield, moisture content, and TPC to be suitable for consumption (Li & Tian, 2019).

In 2010, the Roa Fish Industry in Boalemo district numbered 14 and continued to shrink until there were only 3 small industries. The four industries are: 1) IKM Maju Bersama, Owner of Sedon Dama, Desa Bangga kec. Paguyaman Pantai 2) IKM Mina Bahari, Owner of Sapa Ibrahim, Desa Bangga kec. Paguyaman Pantai, and 3) IKM Surga Tomini, Owner of Union Dama, Desa Bangga Kec. Paguyaman Pantai.

The decline in the number of these industries is due to various factors, including the emergence of new competitors or julung-julung fish processing companies from Central Sulawesi. Another factor that has the most influence is the catch of julung-
julung fish, which decreases every year (Sharopatova, 2020). The Boalemo Regency Government, through the Central Bureau of Statistics, details the number of catches of julung-julung fish in table 1 below:

| Year | Capture Fish Production (Ton) | Roll-up Fish Production (ton) | Percentage (%) |
|------|------------------------------|------------------------------|----------------|
| 2015 | 13,703.50                    | 74.66                        | 0.54           |
| 2016 | 16,345.22                    | 75.82                        | 0.46           |
| 2017 | 14,662.75                    | 75.46                        | 0.51           |
| 2018 | 18,966.00                    | 88.65                        | 0.47           |
| 2019 | 17,608.30                    | 63.03                        | 0.36           |
| Mean | 16,257.15                    | 75.52                        | 0.47           |

Source: BPS and Dinas KKP Kab. Boalemo, 2020

This condition lasted until now. Therefore, efforts are needed to maintain the continuity of this hereditary business. One action that can be done is to develop the small Roa fish smoking industry to a larger business stage. Today’s business development strategy is very much needed to advance a company, with business development through previously analyzed systems, and it is hoped that the company can be competitive and be able to develop its business to meet the needs of the community at large (Lee, Kim & Kang, 2021).

There are several intensive strategies in the business development strategy: market penetration, market development, and product development (Zhang, Pang, Bahaj & Wang, 2021). These three strategies require intensive efforts if a company’s competitive position with existing products is to improve (Asriningputri & Handayeni, 2019). The preparation of a business development strategy can use several descriptive quantitative and qualitative analyzes with several methods, namely: Internal Factor Evaluation (IFE) Matrix and External Factor Evaluation (EFE), Internal-External Matrix (IE), Strengths Weaknesses Opportunities Threats Matrix (SWOT) and Analytical Hierarchy Process (AHP) (David, 2008).

(Syariah & Asruddin, 2018) their research stated that the Roa smoking industry needs the touch of the hands of academics to provide stimulus related to Roa fish processing. Referring to this, further analysis is required to describe the current condition of the Roa fish smoking industry, especially during the Covid-19 pandemic period. There is a need for strategies and policies to develop the Roa fish industry into a larger industrial realm.
B. METHOD

The method used in this research is qualitative and quantitative methods that aim to formulate a development strategy for an industry based on the internal and external conditions owned by the small roa fish smoking industry in the Boalemo district. This study used several data collection techniques, including subjective observation of things related to research variables such as problems regarding the industrialization of the Roa fish business, in-depth interview techniques with related parties, and questionnaires using the SWOT matrix as a tool for compiling factors. Strategy.

This research was conducted for approximately 3 (three) months, namely April to June 2020. The chosen research location was following the research title. It was very relevant to the problems raised were ROA fish business actors in Boalemo Regency, including (1) IKM Maju Bersama, Owner of Sedon Dama, Desa Bangga, Paguyaman Pantai, (2) IKM Mina Bahari, Owner of Sapa Ibrahim, Desa Bangga, Paguyaman Pantai, and (3) IKM Surga Tomini, Owner of Union Dama, Desa Bangga Kec. Paguyaman Pantai.

The data used in this research are quantitative data and qualitative data. Quantitative data is collected and expressed in numbers, although it is also in the form of qualitative data to support it (Searles et al., 2018). This data includes words or sentences arranged in a questionnaire, resulting from consultations or interviews between researchers and the Roa Fish Smoking Business Owner. The data obtained are primary in data from observations or observations made by directly observing the production and marketing process of smoking Roa fish in Boalemo Regency. As well as through interviews with Roa Fish business actors and stakeholders from the KOPPERINDAG Office for Industry and the Office of Marine Affairs and Fisheries in Boalemo Regency.

Data yang diperoleh selanjutnya dianalisis sesuai tujuan penelitian. Kelayakan usaha ikan Roa dianalisis nilai NVP (net present value) dengan rumus: \[
NPV = \sum PV (Benefit – Cost) – Initial Investment Cost \]

Business feasibility is also analyzed using the Internal Rate Of Return (IRR) to calculate an interest rate that equates to the current and future investment values (Harinance et al., 2018). Apart from these two methods, business feasibility is also analyzed by considering the Benefit-Cost Ratio (B / C Ratio), Payback Period (PP) and Break-Even Point (BEP) (Pangemanan, 2016). The PP, B / C, and BEP ratio values are obtained by entering research data in the following formulas (Ummam, 2016).

\[
PP = \frac{Total Investment}{Net\ cash\ flow} \times 12\ Months ...................................................(2)
\]

\[
BCR = \frac{PV\ Benefit}{PV\ Cost} .....................................................(3)
\]
After all the business feasibility parameters have been analyzed successfully, the next step is to formulate a development strategy using a SWOT analysis. Before entering the SWOT stage, the researcher first determines the IFAS and EFAS factors based on interviews and questionnaires. Internal assessments are carried out to measure the extent of the strengths and weaknesses of the IKM. A brief step in conducting internal organizational research is to use the IFE (Internal Factors Evaluation) matrix, then research external organizations using the EFE (External Factors Evaluation) matrix (Village et al., 2017).

The SWOT matrix systematically identifies the four factors included in the analysis that illustrate the best fit between them (Telyatnikova, 2020). This analysis is based on the assumption that a strategy will maximize strengths and opportunities and minimize weaknesses and threats (Searles et al., 2018). The SWOT matrix is used to develop four types of alternative strategies, namely SO (Strengths-Opportunities), WO (Weaknesses-Opportunities) strategy, ST strategy (strengths-threats), and WT (Weaknesses-Threats) strategy (Mujiningsih, 2013).

C. RESULT AND DISCUSSION

The production process of Julung-julung fish into smoked Roa fish at IKM-IKM in Boalemo Regency includes receiving raw materials, sorting raw materials, clamping and binding procedures, and smoking and packaging processes. The people of Gorontalo love smoked Roa fish because of its delicious and savoury taste. Smoked Roa fish is usually used as various processed variants, including sagela chilli, sagela porridge, sagela fried rice and sagela shredded instant sagela flavour.

The small Roa fish smoking industry in Boalemo district has 100-400 clips per day with traditional facilities and infrastructure. The facilities and infrastructure owned by the IKM consist of a floor for Roa fish clamping, a smoking room, a warehouse for storing smoking products, and a boat from the village government. Based on the interview results, information was obtained that the small Roa fish smoking industry carried out sales transactions with one permanent collector who had been a partner of the business owner. Dependence and attachment to one collector are caused by the collector’s position as the provider of capital. Observation and interview data collected during the study provides an overview of the income from smoked Roa fish production with the following details:
The feasibility of a business is measured using investment criteria; the calculation of investment criteria is based on net cash flow, namely the sum of net income with depreciation; the investment criteria used include Net Present Value (NPV), Benefit Cost Ratio (BCR), Payback Period (PP), and Break-Even Point (BEP) (Pangemanan, 2016). The feasibility analysis results with these investment criteria provide an overall picture that the small and medium-sized Roa fish smoking industry in Boalemo Regency is financially feasible and investment.

Table 3 Financial Feasibility Analysis of Small and Medium Industries to Smoking Roa Fish

| Investment Criteria                  | Analysis results | Achievement Criteria | Feasibility Analysis |
|--------------------------------------|------------------|----------------------|----------------------|
| Net Present Value                    | Rp. 52,194,214   | Positive             |                      |
| Benefit-Cost Ratio                   | 1,11             | > 1                  |                      |
| Internal Rate of Return              | 53,08 %          | 14 %                 | Worthy               |
| Break-Even Point (Unit)              | 165              |                      |                      |
| Break-Even Point (Rp)                | Rp 767,661       |                      |                      |
| Payback Period                       | 1,7 year         | Year 2               |                      |

Based on the SWOT analysis, internal and external factors that describe the strengths, weaknesses, opportunities, and threats that affect industrial development strategies are obtained, the interaction of internal and external factors in the analysis of the process for developing the Roa fish industry in Boalemo district is shown by the following matrix:
Table 4 Interaction Matrix of Internal and External Factors Analysis

| Internal factors                          | External Factors                          |
|------------------------------------------|------------------------------------------|
| **Power**                                | **Opportunity**                          |
| 1. Accessibility of Raw Materials        | 1. Government support and attention      |
| 2. Availability of adequate labour       | 2. Extensive market opportunities         |
| 3. Product prices are affordable         | 3. The products produced are well known by the wider community, especially in Gorontalo. |
| 4. Have partner collectors and a network of fishermen who supply raw materials | 4. Potential for product diversification |
| The production site is spacious and self-owned |                                           |

| Weakness                                 | Challenge                                 |
|------------------------------------------|-------------------------------------------|
| 1. Limited capital for business development | 1. The existence of similar industries from outside the province |
| 2. Inadequate industrial facilities and infrastructure | 2. People's purchasing power has decreased |
| 3. No industrial labels or branding      | 3. The influence of erratic weather       |
| 4. Administration and Financial Management are not yet organized | 4. Price competition between collectors |
| 5. The location of the roa fish smoking industry is very far from the centre of the crowd. | 5. The price war for raw materials on fishermen |

Source: Researcher Primary Data, 2020

After determining the strengths and weaknesses of internal factors and opportunities and threats to external factors, then the following IFAS-EFAS weighting is carried out.
### Table 4. Internal factor Interaction Matrix

| No | Internal factors                                                                 | Weight | Rank | Score   |
|----|----------------------------------------------------------------------------------|--------|------|---------|
| **Strength**                  |                                                  |        |      |         |
| 1  | Accessibility of Raw Materials                                                   | 0.20298| 3    | 0.60893|
| 2  | Availability of adequate labour                                                  | 0.15268| 2.25 | 0.34353|
| 3  | Harga produk terjangkau                                                          | 0.23631| 3.5  | 0.82708|
| 4  | Have partner collectors and a network of fishermen who supply raw materials     | 0.13601| 2    | 0.27202|
| 5  | The production site is spacious and self-owned                                  | 0.27202| 4    | 1.0881  |
| **Total Strength**            |                                                  | 1.00   | 3.13966|       |
| **Weakness**                  |                                                  |        |      |         |
| 1  | Limited capital for business development                                         | 0.19953| 2.25 | 0.44894|
| 2  | Inadequate industrial facilities and infrastructure                              | 0.22958| 2.5  | 0.57395|
| 3  | No industrial labels or brands                                                   | 0.25231| 2.75 | 0.69385|
| 4  | Administration and Financial Management are not yet organized                    | 0.11122| 1.25 | 0.13902|
| 5  | The location of the roa fish smoking industry is very far from the centre of the crowd | 0.20736| 2.25 | 0.46656|
| **Total Weakness**            |                                                  | 1.00   | 2.32233|       |
| **Total Internal Factor Strength (Strength + Weakness)** | 5.46199 |

Source: Researcher Primary Data. 2020

The weighting of the IFAS factor is intended to determine the influence of internal factors (strengths and weaknesses) that impact the element itself. This is following the statement put forward by Asriningputri & Handayeni (2019). The total internal factor strength is 3.13966, and the absolute internal factor weakness is 2.32233. Overall, the total internal factor strength (Strength + Weakness) is 5.46199. This total
value is a value that shows how much influence internal factors have on the development strategy of the Roa processing industry in Boalemo Regency.

| No | External Factors                                                                 | Weight | Rank | Score   |
|----|----------------------------------------------------------------------------------|--------|------|---------|
| 1  | Government support and attention                                                  | 0.26136| 3    | 0.78409 |
| 2  | Extensive market opportunities                                                    | 0.34848| 4    | 1.39394 |
| 3  | The resulting products are well known by the public, especially in Gorontalo       | 0.21591| 2.5  | 0.53977 |
| 4  | Potential for product diversification                                            | 0.17424| 2    | 0.34848 |

**Total Opportunities** 1.00000 3.06629

**Challenge**

1. The existence of similar industries from outside the province
2. People's purchasing power has decreased
3. The influence of erratic weather
4. Price competition between collectors
   The price war for raw materials on fishermen

**Total Challenge** 1.00000 2.54108

**Total External Factor Strength (Opportunity + Challenge)** 5.60737

Source: Researcher Primary Data. 2020

As well as internal factors. External factors also influence development strategies. External factors affect the formation of opportunities and threats (O and T). This factor relates to conditions that occur outside the company that affect the company's decision-making. This data shows that the real opportunity for external factors is 3.06629, and the real Challenge for external factors is 2.54108. Overall, the whole outer factor strength (Opportunities + Challenges) amounted to 5.60737. This total value is a value that shows how much influence external factors have on the development strategy of the Roa processing industry in Boalemo Regency.

Based on the results of calculations that have been carried out through SWOT analysis. Then we get the final value of the internal factors, namely strengths and
weaknesses. As well as external factors, namely opportunities and threats with the following recapitulation:

**Table 5. Recapitulation of Internal and External Factor Value Calculation in Small Roa Fish Smoking Industry in Boalemo Regency**

| No | Description | Score |
|----|-------------|-------|
| 1  | Internal factors |       |
|    | Strengths    | 3.13  |
|    | Weakness     | 2.32  |
| 2  | External Factors |       |
|    | Opportunity  | 3.06  |
|    | Threat       | 2.54  |

Source: Researcher Primary Data. 2020

The recapitulation results provide information related to the strategy used in the form of exploiting opportunities as well as possible. I am trying to minimize weakness and use the strength as the principal capital and suppressing threats supporting the strategy to develop the small industry for smoking Roa fish in the Boalemo district.

The process of making strategic decisions for the development of the Roa fish industry in Boalemo district refers to the survey results related to strength, opportunities and threats on the field. This is then compiled as an appropriate industrial development strategy based on a SWOT analysis with the proposed approach (Jogiyanto, 2005), and by researchers modified into the following:

**Table 6 SWOT Matrix of the Strategy for the Development of the Medium Kim and Smoked Roa Industry in Boalemo Regency**

| SWOT matrix | **Strength (S)** | **Weakness (W)** |
|-------------|------------------|------------------|
|             | 1. Use of raw materials | 1. Limited capital for business development |
|             | 2. Availability of adequate labour. | 2. Inadequate industrial facilities and infrastructure |
|             | 3. Product prices are affordable. | 3. No industrial labels or brands |
|             | 4. Have partner collectors and a network of fishermen who supply raw materials. | 4. Administration and Financial Management are not yet organized |
|             | 5. Spacious and self-owned production site | 5. The location of the roa fish smoking |

http://internationaljournal.net/index.php/endless
| Opportunity (O) | Strategy S-O | Strategy W-O |
|----------------|--------------|--------------|
| 1. Government support and attention | • Business actors must increase marketing by maximizing the analysis of market segments to be targeted. | • Submit a request for infrastructure assistance to the ministry of industry |
| 2. Extensive market opportunities | • Take advantage of the availability of raw materials to increase the amount of production. | • Apply for a capital loan to the BANK |
| 3. The products produced are well known by the wider community, especially in Gorontalo. | • We are developing products from the diversification of roa fish. | • They are creating brands and labels so that the public better knows that they are local products. |
| 4. Potential for product diversification | • Improve relationships with partners to increase the absorption of production products | • Improve the industrial management system |

| Threat (T) | Strategy S-T | Strategy W-T |
|------------|--------------|--------------|
| 1. The existence of similar industries from outside the province | • Strengthening relationships with partners and networks to suppress activities from collectors | • Streamline the promotion and use of brands and labels to face competition from similar products |
| 2. The purchasing power of the people decreases | • Increase the amount of production to be able to compete with competitors | • Utilizing social media as a media to promote so that the wider community can better manage it |
| 3. The influence of erratic weather | • They were maintaining product prices so that people can afford them. | • Request for borrowing capital to support production facilities and infrastructure |
| 4. Price competition between collectors | | |
| 5. The price war of raw materials on fishers. | | |

Source: Researcher Primary Data, 2020
Table 6. The alternative sequence of SWOT strategies

| No | Strategy                        | Score  |
|----|---------------------------------|--------|
| 1  | Strength – Opportunity (SO)     | 6.20595|
| 2  | Strength – Threat (ST)          | 5.68074|
| 3  | Weakness – Opportunity (WO)     | 5.38859|
| 4  | Weakness – Threat (WT)          | 4.86341|

Source: Researcher Primary Data, 2020

The highest alternative SWOT strategy is Strength – Opportunity (SO). The Roa fish industry best uses this strategy in the Boalemo district to develop its sector by utilizing all its strengths to seize and take advantage of the most incredible possible opportunities. This study also used a SWOT analysis with a Cartesian diagram. This analysis refers to four strategies according to their four squadrons.

The SWOT analysis results using the diagram courtesies strategy begin by calculating the scale on the X-axis and the Y-axis. The results of the scale calculation in this study are as follows.

\[
Y = \frac{O-T}{2} = \frac{3.06629-2.54108}{2} = 0.262602
\]

\[
X = \frac{S-W}{2} = \frac{3.13966-2.32233}{2} = 0.408664
\]

After calculating the X-axis and Y-axis scale, the values are then plotted into the following Cartecius diagram.

Refer to the SWOT matrix analysis and the graph plotted on the Cartesian diagram. Then the right development strategy for the small Roa fish smoking industry in the Boalemo district is aggressive. On this strategy. The roa fish industry takes
advantage of internal strengths and takes advantage of all opportunities with the following detailed policy strategies:

1. We are creating brands and labels so that the public can recognize products to develop and dominate the existing market in Gorontalo.
2. Improve cooperative relationships with existing partners and networks.
3. Take advantage of the abundance of raw materials to increase the amount of production to meet the significant market demand.
4. Submit a request for assistance for facilities and infrastructure to the ministry of industry.
5. They are developing a diversification of processed products from smoked Roa fish derivatives. So that people have many choices for Roa fish products.

D. CONCLUSION

The small Roa fish smoking industry in Boalemo Regency is feasible in investment based on a feasibility analysis with NPV. BCR. PP and BEP. The SWOT analysis results provide information that the Strength-Opportunity strategy is a development strategy that has the highest weight. The policy to support this development strategy is to create brands and labels. Improve cooperative relations with existing partners and networks. Take advantage of the abundance of raw materials to increase the amount of production. Apply for assistance for facilities and infrastructure. As well as developing a diversification of processed products from smoked Roa fish derivatives. Therefore. The government must be more proactive with the various problems faced by roa fish business activists. They were considering that roa fish is one of the traditional Gorontalo dishes that need to be preserved. Other than that. The Roa fish smoking business owner should attend various industrial management seminars/workshops so that they are constantly updated with the times so that their industry is not eroded by time.

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