



Rationalization of Fisheries Business Affected by the Covid-19 Pandemic: Case Study: Sungai Batang Village, Province of South Kalimantan, Indonesia

Singgih Honggo Seputro¹, Idiannor Mahyudin^{2*}, Ahmadi³

¹Marine and Fisheries Service of South Kalimantan Province

^{2,3}Fisheries Science Post Graduate Program, Lambung Mangkurat University, Indonesia

***Corresponding Author:** Idiannor Mahyudin, Fisheries Science Post Graduate Program, Lambung Mangkurat University, Indonesia

Abstract: The COVID-19 pandemic has a negative impact on the world's economy including fisheries businesses in Indonesia. A case of study was performed to rationalize fishery business affected by COVID-19 pandemic in Sungai Batang Village, South Kalimantan Province of Indonesia, started from August 2020 to May 2021. The research aims at analyzing (1) the profit comparison, (2) the perception of purchasing power and (3) rationalization strategy of fishery business affected by Covid-19 pandemic. A total of 64 respondents were selected and deeply interviewed using semi-structured questionnaires. Data were analyzed quantitatively using a range of different equations. The results showed that fishery business profit during the pandemic decreased by 40.86%, while the purchasing power declined by 70.31%. To rationalize fishery business affected by this pandemic, it is strongly recommended (1) controlling fishery commodity production and increasing competitiveness of processed fishery products, (2) managing business cash flow to maintain business operations in a healthy manner through efficiency and effectiveness of production costs coupled with a recovery in the availability of business capital; (3) applying for relaxation of credit loan installment payments from banking institutions or other financial institutions; and (4) expanding the marketing channel of fishery commodities and processed fishery products by activating an e-commerce-based buying and selling portal.

Keywords: Fishery business, profit, purchasing power, rationalization, Sungai Batang Village.

1. INTRODUCTION

Like other countries, the Covid-19 pandemic is also widespread and rapidly reaching Indonesia, requires the government to immediately take policy steps to control its spread. The implementation of the Large-Scale Social Restriction rules resulted in limited space for movement and community activities in the public zone [1]. The Covid-19 outbreak not only created a health emergency but also have the impact on the global economic sector, including marine and fisheries sector. The impact is felt, among others, the price of fish dropped dramatically by 50% due to reduced market demand due to lack of buyers. Fish distribution has also experienced obstacles due to this policy. During the Covid-19 pandemic, many ecotourism locations were also temporally closed, and the sales of processed fishery products decreased significantly [2].

To control and restore the economic impact of the Covid-19 pandemic, small scale fisheries business need to be assisted in solving this problem through a scientific approach in determining the priority strategies for their business rationalization. By doing this, it is expected that fishery business activities during the COVID-19 pandemic keep going on, and then the business profits and purchasing power of fisheries businessmen can be restored. Therefore, the research aimed at analyzing (1) the profit comparison, (2) the perception of purchasing power and (3) rationalization strategy of fishery business affected by Covid-19 pandemic.

2. MATERIALS AND METHODS

2.1. Site Study

This research was conducted in Sungai Batang Village of South Kalimantan Province, Indonesia, starting from August 2020 to May 2021. Except fishing business activities in the rivers, the villagers also involved in fish farming in fish cages, fish processing and marketing of fisheries products.

2.2. Research Methods and Data Analysis

The research activities included comparative analysis of profits and perceptions of the purchasing power of fishery businessmen in Sungai Batang Village before and during the Covid-19 pandemic. Furthermore, SWOT analysis was used to formulate the prioritized strategic plan for rationalizing of fisheries businesses affected by the Covid-19 pandemic. All data and information obtained from the field survey were well-documented accordingly.

2.3. Comparative Profit Analysis

2.3.1. Profit Concept

Profits are an indicator of success in economic activity. Its success depends heavily on the ability of the business unit to create cash flow. Profit analysis aims to obtain information about the benefits obtained from a business activity [3]. Gigentika and Wisudo [4] stated that the profit (π) was determined by Total Revenue (TR) and Total Cost (TC). It can be expressed as $\pi = TR - TC$. Economic activity is profitable if the π value is positive ($\pi > 0$) or indicated by $TR > TC$. Mohu et al. [5] explained that the total revenue (TR) is the result of multiplication between the amount of production (Q) and the price (P) of each unit of product sold. Total revenue can be calculated using the following equation [6]:

$$TR = P \times Q$$

While Total cost (TC) is the sum of fixed cost (FC) and variable cost (VC) spent along business activity, which can be stated with a simple equation [7]:

$$TC = FC + VC$$

2.3.2. Profit Analysis

The profit analysis uses a qualitative approach with a survey method. Data were analyzed to compare the profits obtained before and during the Covid-19 pandemic. The profit was stated in percentage using the following equation [8]:

$$g\pi_t = \frac{\pi_t^r - \pi_{t-1}^r}{\pi_{t-1}^r} \times 100\%$$

where: $g\pi_t$ = profit growth (%), π_t^r = profit during the Covid-19 pandemic, π_{t-1}^r = profit before the Covid-19 pandemic.

The next step is to find business feasibility status during the Covid-19 pandemic with R/C Ratio. The Revenue-cost ratio aims to see how much each Rupiah value of cost used in business activities can provide a certain amount of revenue value as a benefit. When $R/C > 1$ it is considered a profitable business; $R/C < 1$ meaning business is not feasible; and $R/C = 1$ meaning business that are run under conditions of break event point (BEP). R/C ratio can be simply estimated using the following formula [9]:

$$R/C \text{ Ratio} = TR/TC$$

2.4. Purchasing Power Perception Analysis

2.4.1. The concept of Purchasing Power

Purchasing power can be defined as the ability of individuals and organizations to buy and use goods and services. The factors that influence purchasing power are income, taste, and price. Income is

money that a person receives in the form of wages, rent, interest, or profit. Taste is a person's willingness or desire to consume and use goods or services. Price is the amount of money that is charged to a certain product, the price in sales is very influential on individuals and groups in making purchases [10].

Consumer's income is the main factor determining purchasing power. The pattern of public consumption is determined by the level of income, the higher the people's income, the better the consumption pattern, this is because people can meet the need for consumption. This indicates that income is one of the main elements that support consumer purchasing power [11]. According to Yusuf and Nurmalah [12], expenditure per capita describes how much purchasing power people have in consuming goods and services. An increase in income will be followed by an increase in people's purchasing power. Income per capita has a positive effect on purchasing power, the more the income per capita will increase the purchasing power, conversely, the lower the income per capita, the lower the purchasing power will be.

The income variable has a positive and significant effect on the amount of household consumption. Income reflects a person's ability to consume both in quality and quantity. The greater the income obtained, the greater the ability to meet food and non-food needs and vice versa. An increase in income will change the consumption pattern of community members. This is because income levels vary between households according to the level of need and ability to manage them [13]. Consumption Theory with the Relative Income Hypothesis put forward by James Duesenberry (1949) explained that consumption expenditure is irreversible. This means that the pattern of a person's expenditure when income increases are different from the pattern of expenditure when income has decreased. Consumption expenditure is divided into two, namely food consumption and non-food consumption. Food consumption consists of grains, vegetables, nuts, fruits, oils and fats, beverage ingredients, spices, processed food, fish, meat, eggs, and milk, while non-food consists of fuel, various goods and services, education costs, health, clothing, footwear, durable goods, and insurance premiums [14].

2.4.2. Analysis of Public Perceptions

Public perception survey aims to get answers quickly to a question that is conveyed directly to respondents through face-to-face, filling out a questionnaire paper, or by telephone. Questions are designed in such a way that answers are easy to categorize and quantify [15]. The type of questionnaire uses the Likert scale method which is closed. The Likert scale method is generally used to measure the level of attitude through attitude statements regarding the object of the attitude to be disclosed [16]. Sources of data for the analysis of purchasing power perceptions were also obtained from questionnaires. The questionnaire was filled in by respondents to the questions posed with 4 answer choices, namely: Decreasing, Increasing, Fixed and Not sure. The percentage of perception based on relative frequency per group of research objects can be calculated using the following formula [17]:

$$p = \frac{f}{n} \times 100\%$$

where: p = the perception (%), f = the frequency of the answers for each of the choices, n = the total number of respondents.

2.5. Rationalization Strategy

2.5.1. Rationalization Concept

The rationalization of economic activity is a strategy to change human action following the values of economic rationality, which is guided by the use of the most effective means for achieving better goals creatively and independently, by taking careful account of the means of support [18].

Rationalization can also be interpreted as a process, way, action to make it rational (according to the ratio), or to make the ratio appropriate (good). In business management, rationalization is one of the policy strategies to improve the situation through saving labor and costs, as well as controlling production, so that the business that is run is healthy [19].

2.5.2. SWOT Analysis

SWOT analysis is a tool that can be used effectively in determining planning strategies and making decisions to achieve goals. SWOT analysis is carried out by identifying and evaluating the internal and external aspects that are both beneficial and unfavorable to achieve these goals. SWOT compares strengths, weaknesses, opportunities, and threats. Strengths and weaknesses are present and future opportunities and threats. The clearer understanding of strengths and weaknesses, the less likely it is to pursue unfeasible opportunities. Also, decent opportunities can be used to fight threats, weaknesses can be overcome through strengths and strengths that can be used to respond to threats [20].

According to Sudarmo et al. [21], the SWOT analysis procedure was carried out in the following stages: (1) Determining internal (strengths and weaknesses) and external (opportunities and threats) factors, (2) Determining the weight and rating of each internal factor and external factor, (3) Determining the weighted score by multiplying the weight value to the rating, (4) Arranging the IFAS matrix and EFAS matrix, (5) Preparing Cartesian Diagram, and (6) Constructing the TOWS matrix.

2.6. Characteristics of Respondents

A total of 64 respondents who have KUSUKA Cards (Fishery business identity card) were deeply interviewed using semi-structured questionnaires. They were 4 fishermen, 39 fish farmers and 21 fish processors and marketers of fishery products as described in Table 1.

Table 1. Number of respondents who involved in fisheries business in Sungai Batang Village

No.	The Group of Fishery Businesses	No. Respondents
1.	Inland openwater fishermen	4
2.	Freshwater fish farmers	39
3.	Fish processors and marketers of fishery products	21
Total		64

The age of respondents was ranged of 15-54 year-old. Dewi and Rustariyuni [22] stated that age has a partially positive and significant effect on fishermen's income. While Suroyya et al. [23] added that age was a supporting factor in achieving success in business activities, people who are still productive will be faster in making decisions about business innovations. Most of them were high school graduates (42.19%), followed by junior high school (32.81%), elementary school (12.50%), and bachelor's degree (7.81%). According to Kumaat and Dotulong [24], education can improve the quality of one's ability to carry out business activities. While Sriyono [25] concluded that the level of public education will affect the level of understanding, which will have an impact on the mindset to change a condition that is better than before. Most of them had business experiences of 8-10 years. Ghozali [26] explains that work experience can be said to be the level of mastery of a person's knowledge and skills in a job which can be measured from the length of service and the level of knowledge and skills possessed.

3. RESULTS AND DISCUSSION

3.1. Profits Analysis

3.1.1. Fishermen Profits

There was change in profit received by local fishermen before and during the Covid-19 pandemic. Table 2 clearly showed that the average profit of fishermen declined by 17.90% from IDR 141,000/trip to IDR 115,750/trip. The decline in profits of fishermen was corresponding to the selling prices of catch such as snake-skin gouramy, snakehead fish and other fish decreased from IDR 33,000/kg to IDR 28,750/kg. This condition is in line with the opinion of Dahar [27] who states that prices have a significant effect on fishermen's income. There is a positive or directional relationship between price variables and fishermen's income. If the price of fish increases, fishermen's income will also increase accordingly.

Table2. Comparative profit of fishermen before and during Covid-19 pandemic

The Group of Fishery Business	Unit of Profit	The average profit (IDR)		Profit Decline (%)
		Before Covid-19 Pandemic	During Covid-19 Pandemic	
Inland open water fishermen	IDR/Trip	141.000	115.750	17.90

A 17.90% decline in profits during the Covid-19 pandemic turned out to be still in a favorable condition for local fishermen in Sungai Batang Village with the R/C ratio of 4.61. Neliyana et al. [9] stated that if $R/C > 1$ meaning that fisheries business was profitable and feasible.

3.1.2. Fish Farmer Profits

Like fishermen's profit, the profits received by fish farmers also declined by 58.88% where before Covid-19 pandemic was IDR 77,058,692/cycle of production decreased to IDR 29,937,236/cycle of production during the Covid-19 pandemic (Table 3). The decline in profits of fish farmers was corresponding to the selling prices of catfish and tilapia from IDR 26,792/kg to IDR 21,382/kg. In line with this study, Suhardi and Herlina [10] reported that the selling price variable has a significant effect on the income of fish farmers.

Table3. Comparative profit of fish farmers before and during Covid-19 pandemic

The Group of Fishery Business	Unit of Profit	The average profit (IDR)		Profit Decline (%)
		Before Covid-19 Pandemic	During Covid-19 Pandemic	
Freshwater fish farmer	IDR/cycle of production	77,058,692	29,937,236	58.88

Besides reduction of selling prices at the producer level, the decline in profits was also caused by an increase of operating costs for pellet supply due to delays in selling of fish during the Covid-19 pandemic. With this condition, the total cost was born by fish farmers become greater. This implies that the number of operational costs as a variable cost component will affect the total cost that will be disbursed from business activities.

Despite the profits decline by 58.88%, the culture business was considered still in a favorable condition for fish farmers since the R/C ratio obtained was 1.24.

3.1.3. Fish Processors and Marketers Profits

The average profit of fish processors and marketers of fishery products before Covid-19 pandemic was IDR 964,429/week, while during the Covid-19 pandemic; it was IDR 522,836/week or declined by 45.79% (Table 4). The selling price of dried fish/salted fish (snake-skin gourami, snakehead fish, Climbing perch) and sales volume of fish products at the producer level decreased by 23.08% and 42.17%, respectively. Lack of tourists visiting the Lok Baintan floating market was main reason behind this condition.

Table4. Comparative profit of fish processors and marketers of fishery products before and during Covid-19 pandemic

The Group of Fishery Business	Unit of Profit	The average profit (IDR)		Profit Decline (%)
		Before Covid-19 Pandemic	During Covid-19 Pandemic	
Fish processors and marketers of fishery products	IDR/week	964.429	522.836	45.79

Not with standing decline in profits of fish processors and marketers of fishery products, their fishery businesses were considered still in a favorable condition with R/C ratio of 1.35.

3.2. Perception of Purchasing Power

Table 5 itemizes the overall perception on purchasing power of fisheries businessmen during the Covid-19 pandemic. About 70% of respondents agreed that their fisheries business profits declined

and the rest of 30% stated in the fixed position. There is a strong correlation between decline in profits and purchasing power. The more income received by the people the more purchasing power to meet their needs. Income conditions will change the consumption pattern of community members. This is because income levels vary between households depend on the level of needs and ability to manage them[11-13].

Table5. Perception analysis of purchasing power of fisheries businessmen during the Covid-19 pandemic

The Group of Fishery Businesses	Percentage of Respondent Perception			
	Decreasing	Increasing	Fixed	Not sure
Inland openwater fishermen (4)	25	0	75	0
Freshwater fish farmers (39)	82	0	18	0
Fish processors and marketers of fishery products (21)	57	0	43	0
Overall Perception (64)	70	0	30	0

3.3. Rationalization Strategies for the Impacted Fisheries Business

Inventory of strategic issues being faced by fisheries business men during the Covid-19 pandemic was made based on the result of field observations with the function approach of the profit ($\pi = TR - TC$) in view of Price Stabilization (P); Production Stabilization (Q); Fixed Cost Management (FC); and Operational Cost Management (VC). Then, internal and external factors are classified based on the variables observed (Table 6).

- 1) Price Stabilization (P)
 - a. Fishery businessmen have no power to determine the selling price of fish (P1).
 - b. There is a government appeal to buy fishery products (P2).
 - c. Not yet developed an online-based marketing distribution system (P3).
 - d. Public interest in consuming fish and processed products (P4).
 - e. The reduced purchasing power of consumers and collecting agents (P5).
- 2) Production Stabilization (Q)
 - a. Availability of productive and experienced fisheries workforce (Q1).
 - b. Availability of fishery production volume (Q2).
 - c. Management of fishery production diversification is still not optimal (Q3).
 - d. The fishery technology used in general is still traditional (Q4).
- 3) Fixed Cost Management (FC)
 - a. There is a loan installment expense at the bank that must be paid (FC1).
 - b. There is no economic stimulus program from the local government to recover fisheries businesses affected by Covid-19 pandemic (FC2).
 - c. Maintenance costs and labor costs are incurred as fixed costs (FC3).
 - d. There is assistance from the central government (FC4).
- 4) Variable Cost Management (VC)
 - a. Relatively larger operating costs (VC1).
 - b. There is a role from non-government to assist (VC2).

Table6. Inventory of internal factors and external factors based on the variables observed

SWOT Inventory			Code	
Internal Factors	Strengths (S)			
	S1	Availability of productive and experienced fisheries workforce	(Q1)	(Q1)
	S2	Availability of fishery production volume	(Q2)	(Q2)
	Weaknesses (W)			
	W1	Fishery business actors have no power to determine the selling price	(P1)	(P1)
	W2	Not yet developed an online-based marketing distribution system	(P3)	(P3)
	W3	Management of fishery production diversification is still not optimal	(Q3)	(Q3)
	W4	The fishery technology used in general is still traditional	(Q4)	(Q4)
W5	There is a loan installment expense at the bank that must be paid	(FC1)	(FC1)	
W6	Maintenance costs and labor costs are incurred as fixed costs	(FC3)	(FC3)	
W7	Relatively larger operating costs	(VC1)	(VC1)	
External Factors	Opportunities (O)			
	O1	There is a government appeal to buy fishery products	(P2)	(P2)
	O2	Public interest in consuming fish and processed products	(P4)	(P4)
	O3	There is assistance from the central government	(FC4)	(FC4)
	O4	There is a role from non-government to assist	(VC2)	(VC2)
	Threats (T)			
	T1	The reduced purchasing power of consumers and collecting agents	(P5)	(P5)
	T2	There is no economic stimulus program from the local government to recover fisheries businesses affected by Covid-19 pandemic	(FC2)	(FC2)

Internal and external factors were derived from the questionnaire results and interview. While the IFAS (Internal Factor Analysis Strategic) and EFAS (External Factor Analysis Strategic) matrixes were made based on the respondent's perception scale (Table 7).

Table7. IFAS and EFAS matrixes analysis

IFAS			Weight	Rating	Score
Strengths (S)					
S1	Availability of productive and experienced fisheries workforce	(Q1)	0,10	2,96	0,31
S2	Availability of fishery production volume	(Q2)	0,11	3,00	0,33
Sub Total (S)			0,22		0,64
Weaknesses (W)					
W1	Fishery business actors have no power to determine the selling price	(P1)	0,10	4,02	0,41
W2	Not yet developed an online-based marketing distribution system	(P3)	0,12	3,96	0,48
W3	Management of fishery production diversification is still not optimal	(Q3)	0,10	4,04	0,42
W4	The fishery technology used in general is still traditional	(Q4)	0,10	4,11	0,41
W5	There is a loan installment expense at the bank that must be paid	(FC1)	0,12	4,13	0,50
W6	Maintenance costs and labor costs are incurred as fixed costs	(FC3)	0,10	4,30	0,45
W7	Relatively larger operating costs	(VC1)	0,13	4,43	0,58
Sub Total (W)			0,78		3,25
Total IFAS			1,00		3,90
EFAS			Weight	Rating	Score
Opportunities (O)					
O1	There is a government appeal to buy fishery products	(P2)	0,12	4,09	0,50
O2	Public interest in consuming fish and processed products	(P4)	0,19	4,14	0,77
O3	There is assistance from the central government	(FC4)	0,20	4,07	0,81
O4	There is a role from non-government to assist	(VC2)	0,12	4,00	0,49
Sub Total (O)			0,63		2,57

Threats (T)					
T1	The reduced purchasing power of consumers and collecting agents	(P5)	0,18	4,23	0,77
T2	There is no economic stimulus program from the local government to recover fisheries businesses affected by Covid-19 pandemic	(FC2)	0,19	4,02	0,77
Sub Total (T)			0,37		1,53
Total EFAS			1,00		4,10

Based on the IFAS and EFAS matrix analysis above, it can be seen that the Strength score of 0.64 was lower than the Weakness score of 3.25, with a difference of -2.61. Meanwhile, the Opportunity score is 2.57 which is greater than the Threat score of 1.53, with a difference of 1.04. Thereby, the ordinate points S-W and O-W in the Cartesian diagram were fixed at the point of (-2.61: 1.04) as displayed in Figure 1.

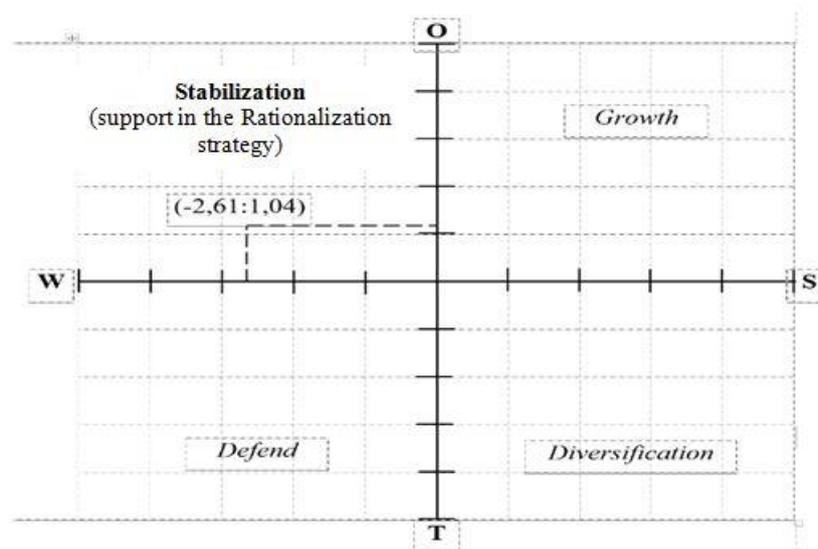


Figure1. Cartesian diagram of IFAS and EFAS analysis results

From the Cartesian Diagram, it can be seen that fishery business activities in Sungai Batang Village substantially have a great opportunity to optimize and maintain business sustainability during the Covid-19 pandemic, even though in point of fact that the weaknesses are still greater than the existing opportunities. In other words, fisheries business can be rationalized by fostering the existing opportunities, while minimizing the internal weaknesses.

To operationalize the ideal concept of fisheries business impacted by the Covid-19 pandemic, further analysis with TOWS Matrix was done by cross-analyzing the identified internal and external factors through the existing IFAS and EFAS matrixes as Sudarmo et al.[21] did. A strategy combination can be set as follows: (1) SO (Strengths-Opportunities) strategy - creating a strategy that uses strength to take advantage of opportunities to support aggressive growth policies;(2) WO (Weaknesses-Opportunities) strategy -making a strategy that minimizes weaknesses to exploit and seize better opportunities to maintain business sustainability; (3) ST (Strengths-Threats) strategy -creating a strategy that uses strength to overcome threats through diversification in both product and marketing aspects; and (4) WT (Weaknesses-Threats) strategy -this strategy is based on defensive activities and is aimed at minimizing existing weaknesses and avoiding threats.

Based on the TOWS matrix, there are 4 rationalization strategies to be done to maintain the sustainability of fisheries businesses affected by Covid-19 in Sungai Batang Village, namely:

SO Strategy: Utilizing the potential of human resources and maintaining the continuity of fishery products availability, which is directed to supporting aggressive business growth, through the following efforts:

- a. Strengthening the marketing partnership network for fishery products with government agencies and the private sector.
- b. Increase the quality and availability of commodities and processed fishery products to maintain consumer loyalty.
- c. Empowerment of group institutional functions and roles to obtain assistance programs from the central government.
- d. Strengthening business partnership networks with non-governmental capital assistance institutions/agencies.

WO Strategy: Revitalizing the upstream-downstream fisheries business system, which is directed to supporting business stabilization and sustainability during a pandemic, through the following efforts:

- a. Controlling fishery commodity production and increasing the competitiveness of processed fishery products.
- b. Managing business cash flow to maintain business operations in a healthy manner through efficiency and effectiveness of production costs coupled with a recovery in the availability of business capital.
- c. Applying for relaxation of credit loan installment payments from banking institutions/ other financial institutions.
- d. Expanding the marketing channel of fishery commodities and processed fishery products by activating an e-commerce-based buying and selling portal.

Since the ordinate point in the Cartesian diagram was in the W-O quadrant area (-2.61: 1.04), so that the WO strategy was acceptable for rationalizing of fisheries business impacted by the Covid-19 pandemic.

ST strategy: Increasing creativity, innovation. and human resource initiatives to increase purchasing power and expansion of capital sources, through the following efforts:

- a. Development of business diversification in commodities and processed products with a relatively faster return on business capital.
- b. Increased cooperation between fishery business groups and fishery extension agents to submit proposals for stimulus assistance from the local government.

WT Strategy: Imposing a fishery business restructuring to save costs and assets, as well as increasing sales returns and declining profits, through the following efforts:

- a. Utilizing information technology to improve access to the marketing of commodities and processed fishery products.
- b. Applying the recommended technology to support fisheries business intensification.
- c. Improving cooperative relations with related agencies and other cooperatives/small scale entrepreneurship to gain access to business stimulus assistance.
- d. Refocusing on maintenance costs, labor, and operational costs.

4. CONCLUSION

The profits and the purchasing power of fisheries businessmen in Sungai Batang Village during the Covid-19 pandemic declined by 40.86% and 70.13%, respectively. The strategies for rationalizing the fisheries business were prioritized on the revitalization of the upstream-downstream fisheries business system including management control of fishery production, management of business cash flow, financial support and expansion of marketing channel.

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