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The financial feasibility analysis of seaweed product at ora food MSMEs in Yogyakarta

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ABSTRACT

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Introduction: Diversification of processed seaweed products aims to respond to changes in consumer preferences, reach a broader market, and reduce the risk of dependence on one particular product type. In addition, product diversification can also be a practical innovation in increasing public interest in fishery products. One is the Ora Food MSMEs Yogyakarta, which is in the form of seaweed chips. Business feasibility is needed in a company's progress, and it is an analysis carried out on agencies on a particular project to provide direction as to whether investment in the project is feasible or not. Therefore, this study aims to analyze financial feasibility and business sensitivity in Ora Food MSMEs. **Methods:** Profitability analysis (BEP, profit, R/C and RTC), financial feasibility (NPV, B/C, IRR and PP) and business sensitivity analysis. **Results:** Profitability analysis, namely BEP sales of Rp. 119,324,566 or selling as many as 6,609 pcs with the product that must be sold the most on the regular spicy seaweed chips product (BEP_{KRLBP}) a total of 3,182 pcs R/C = 2.18 (>1), RTC = 95.42% (>6%) then financial feasibility is NPV = Rp. 747,908,878,- (NPV positive) Net B/C = 3.62 (>1) and IRR = 65% (>6%) and payback period = 1.65 years. Furthermore, the business sensitivity analysis uses three scenarios, namely (1) Costs increase (138%), benefits remain the same, (2) Costs remain the same, benefits decrease (41%), and (3) Costs increase (56%), Benefits decrease (31%). **Conclusion:** The results of the financial feasibility analysis show that the business is profitable in the short term and financially feasible. In the sensitivity analysis, it can be concluded that the company is quite sensitive if there is a decrease in benefits but is not sensitive to increasing costs. Therefore, sales are expected to be constant at current production or improved by using optimised social media online marketing to reach a larger market.

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INTRODUCTION

Indonesia is one of the five largest fishery-producing countries in the world, endowed with abundant marine resources that hold tremendous economic potential. However, many regions across Indonesia have yet to fully utilize their fisheries resources, particularly in terms of processing value-added products. As of 2024, Indonesia ranks second after China as the world's largest seaweed producer and contributes significantly to global exports (Intyas & Primyastanto, 2020). Seaweed is considered a national priority commodity, widely recognized for its benefits in both food and non-food industries, and valued for its economic and ecological importance.

Nevertheless, the development of seaweed-based processed products in Indonesia remains concentrated in coastal production centers, while downstream innovation in non-coastal regions is still very limited. A majority of seaweed is still sold in raw, dried, or frozen forms with minimal processing. This represents an untapped opportunity, as seaweed processing has the potential to increase its market value, raise community income in both coastal and inland areas, and expand market access, especially for micro, small, and medium enterprises (MSMEs) (Agustang *et al.*, 2021; Gaurahman & Arka, 2020).

In countries such as Japan, South Korea, and China, seaweed has been widely processed into food, cosmetics, and even pharmaceuticals. In contrast, MSMEs in Indonesia, particularly those located outside major production areas, continue to face challenges such as limited market access, insufficient capital, and lack of production innovation. The Special Region of Yogyakarta, for example, is not a primary seaweed-producing area. However, in Gunungkidul Regency, seaweed production reached 64 tons in 2022, mostly from species such as *Gracilaria*, *Ulva lactuca*, and *Sargassum*, which were harvested manually without the use of boats (KKP Statistics, 2022).

A notable innovation from a non-coastal area is Ora Food, an MSME based in Yogyakarta, which has successfully developed seaweed-based processed products such as seaweed chips for both domestic and export markets. This case presents a relevant context to assess the financial feasibility of marine resource-based food innovations in underutilized, non-production regions.

Although literature on the financial analysis of fisheries enterprises continues to grow, studies that specifically assess the financial feasibility of small-scale seaweed processing businesses in non-coastal areas remain scarce. Most existing studies focus on enterprises located in coastal areas or major production centers, leaving a gap in understanding the adaptation and resilience of inland seaweed-processing MSMEs. Several studies in Indonesia have shown that small-scale seaweed processing businesses in villages or in areas that are not considered major production zones can still be financially viable. This is indicated by positive NPV, IRR above commercial bank interest rates, B/C ratios greater than 1, and relatively short payback periods (Rini Pratiwi, 2022). For example, a case study of a seaweed-processing MSME in Tarakan City reported an NPV of IDR 133,813,050, an IRR of 241.7%, a B/C ratio of 3.29, and a payback period of only 4 months. These indicators demonstrate high profitability, even outside traditional cultivation areas.

However, MSMEs in non-coastal areas face key challenges such as limited market access, insufficient capital, inadequate technology, and underdeveloped logistics infrastructure (Rimmer *et al.*, 2021). Business actors have adapted by diversifying their products, engaging in collaborations with other MSMEs, and utilizing digital marketing to expand their market reach. These strategies have proven to support business sustainability amid market pressures and price volatility. Furthermore, strengthening social capital and networks among business actors has also proven essential in maintaining business continuity and growth, especially in the face of supply chain disruptions and fluctuating market demand (Rimmer *et al.*, 2021).

This study is important as it fills a gap in the literature on the financial feasibility of small-scale seaweed processing enterprises in non-coastal areas. Most feasibility studies in the fisheries sector have focused on aquaculture activities in coastal regions or major production centers, without adequately addressing the dynamics and potential of inland seaweed-processing MSMEs. In fact, marine commodity-based innovation in less-productive areas such as Yogyakarta demonstrates significant economic potential, particularly when supported by appropriate adaptive strategies. Ora Food, a seaweed-processing MSME based in Yogyakarta, serves as a concrete example of such innovation. Therefore, assessing the financial feasibility of this business not only provides insight into its sustainability from an economic perspective, but also broadens the understanding of how marine product processing can be developed outside major production hubs. This study contributes to academic discourse and policy development by providing empirical evidence on the prospects of seaweed-processing businesses in non-coastal areas and their relevance in strengthening local MSMEs based on marine resources.

METHODS

This research is a case study, as defined by (M Nazir, 2003), which investigates in depth the status and characteristics of the research subject. In this context, the subject is Ora Food, an MSME based in Yogyakarta. Ora Food has been a pioneer in seaweed processing since 2019, producing seaweed chips and sprinkled seaweed toppings, and has successfully entered the export market.

Primary data were collected through direct observation at the business site, structured and in-depth interviews, as well as questionnaires distributed to the owner and employees. The information gathered includes financial data such as cost structure, selling prices, and profit per product. These data were obtained from internal financial records, direct interviews, and observation of the production process.

Secondary data were used to complement the primary data and provide additional context. Internal secondary data were sourced from Ora Food's official website, which contains product information. Meanwhile, external secondary data were obtained from the websites of Bank Indonesia and the Central Statistics Agency (BPS) of Yogyakarta City and the Special Region of Yogyakarta Province, particularly regarding geographic, demographic, and regional fishery potential.

The analysis was conducted quantitatively using financial feasibility indicators, namely Net Present Value (NPV), Internal Rate of Return (IRR), Benefit-Cost Ratio (B/C), and Payback Period (PP), with a discount rate of 6% based on the Bank Indonesia benchmark interest rate (BI, 2024). According to (Abidin *et al.*, 2022), profitability analysis is essential as it reflects a company's ability to generate profits and maintain liquidity both in the present and in the future.

This study conducted profitability analysis and financial feasibility as follows:

1. Profitability analysis by calculating BEPs, BEPq, net profit, R/C and RTC.
 - a. Break Even Point (BEP)
BEP refers to the number of units to be sold or the minimum income to be obtained to return the investment (i.e. total revenue and total costs are equal). If total revenue or production exceeds the break-even point, profit is made (Irzal & Oktariza, 2006). BEP sales (BEPs) and BEP units (BEPq) were calculated as follows:

$$BEP_s = \frac{FC}{1 - \frac{VC}{TR}} \quad (1)$$

where:

FC = Fixed Cost (Rp)

VC = Variable Cost (Rp)

TR = Total Revenue (Rp)

$$BEP_q = \frac{FC}{P - V} \quad (2)$$

where:

FC = Fixed Cost (Rp)

P = Product Price/unit (Rp)

V = Variable Cost/unit (Rp)

Because there are multiple products, the BEP unit is calculated based on the revenue of each product adjusted to the price per product and presented with the BEP sales value.

b Net Profit (π)

(Soekartawi *et al.*, 1986), defined net profit as the amount of income after removing the operational costs (fixed and variable costs).

$$\pi = TR - TC \quad (3)$$

where:

π = Net Profit (Rp)

TR = Total Revenue (Rp)

TC = Total Cost (Rp)

c R/C

R/C analysis compares the annual relative profit of a company to its operational costs. A company makes a profit if R/C is greater than 1 (Irzal & Oktariza, 2006). R/C was calculated as follows:

$$\frac{R}{C} = \frac{TR}{TC} \quad (4)$$

where:

TR = Total Revenue (Rp)

TC = Total Cost (Rp)

Total Revenue (TR) was obtained by multiplying the produced product (Q) by the sales price (P):

$$TR = P \times Q \quad (5)$$

where:

TR = Total Revenue (Rp)

P = Product Price (Rp/kg)

Q = Amount of Sold Products (kg)

Total Cost (TC) was obtained by summing the fixed cost (FC) and variable cost (VC):

$$TC = FC + VC \quad (6)$$

where:

TC = Total Cost (Rp)

FC = Fixed Cost (Rp)

VC = Variable Cost (Rp)

d Return to Total Capital (RTC)

RTC analysis determined the profitability level of all resources used in business operational activities. RTC was then compared to the loan interest set by banks (Soekartawi *et al.*, 1986). RTC was calculated because they employed their family members in production activities and were unpaid. To calculate the return obtained by small-scale fishing, RTC was calculated as follows:

$$RTC = \frac{\pi - NKK}{\text{Working Capital}} \times 100\% \quad (7)$$

where:

π = Net Profit (Rp)

NKK = Work Value of the Relatives (Rp)

RTC value is considered good if it exceeds the rate of microloan interest without being compared with the opportunity cost of capital. The loan interest rate applied during this research was 6% (BI, 2024).

2. Financial feasibility analysis was conducted by measuring the NPV, B/C, IRR and PP

a Net Present Value (NPV)

NPV is the difference value between the Present Value of benefit flows and the Present Value of cost flows (Gray *et al.*, 1992). NPV measures the time value of money and gives inconsistent interpretations. If the NPV is positive, the company is profitable. The following was the formula used to calculate NPV (Campo & Zuniga Jara, 2018). NPV was calculated as follows:

$$NPV = -A_0 + \sum_{t=1}^n \frac{A_t}{(1+i)^t} \quad (8)$$

where:

A_0 = Investment expenditure in year 0 (Rp)

A_t = Net cash inflows in year t (Rp)

i = Interest rate (%)

n = Economic life of the project (years)

b Benefit Cost Ratio (B/C)

B/C compares the present value and the present investment's net cash income in the future. An investment is profitable if the B/C value exceeds 1 (Rangkuti, 2012). B/C was measured using the following formula:

$$\frac{B}{C} = \frac{\sum_{t=1}^n \frac{B_t}{(1+i)^t}}{\sum_{t=1}^n \frac{C_t}{(1+i)^t}} \quad (9)$$

where:

B_t = Gross income in year t (Rp)

C_t = Gross cost in year t (Rp)

n = Economic life of the project (years)

i = Interest rate (%)

c Internal Rate of Return (IRR)

IRR is the discount rate that sets the net investment value (Gray *et al.*, 1992). If the interest rate of IRR is higher than the targeted profit, a company is considered profitable (Rangkuti, 2012). IRR was calculated as follows:

$$IRR = i_1 + \frac{NPV_1}{NPV_1 - NPV_2} (i_2 - i_1) \quad (10)$$

where:

NPV_1 = NPV with positive value (Rp)

NPV_2 = NPV with negative value (Rp)

i_1 = Interest rate when NPV is positive (%)

i_2 = Interest rate when NPV is negative (%)

d Payback Period (PP)

PP refers to the time investors need to pay back all investment costs. When the PP of a company is shorter than the predetermined PP, the company is considered profitable (Rangkuti, 2012). PP was calculated using the following formula:

$$PP = \frac{A_0}{\pi} \quad (11)$$

where:

A_0 = Investment expenditure in year 0 (Rp)

π = Net profit (Rp)

3 Sensitivity analysis

Sensitivity analysis is a method used to evaluate the impact of various changes in key variables on potential outcomes. Additionally, it can be understood as a simulation activity carried out by altering the values of causal variables in order to assess their effect on cash flows and determine their influence on expected results. Sensitivity analysis assists managers in reviewing cash flow estimates that were previously prepared by their staff. One of the factors that can influence project cash flows includes variables such as market share, market size, the number of products sold, unit selling price, variable costs, fixed costs, and others (Riyanto, 2010).

This analysis is conducted based on the hypotheses of revenue decline and cost increase. A decline in revenue may occur due to changes in consumer preferences for the product, which in turn leads to a decrease in product demand (Intyas *et al.*, 2019). The analysis involves altering a single parameter value and observing its impact on the feasibility of an investment option. There are three scenarios in this analysis: Scenario I (Cost Increase), Scenario II (Revenue Decrease), and Scenario III (Both Cost Increase and Revenue Decrease). By simulating these three scenarios, managers can identify critical points that most significantly affect cash flows and take appropriate mitigation measures. Factors such as changing consumer preferences, fluctuations in raw material prices, and inflation of business inputs are key

variables that must be monitored regularly. This sensitivity analysis is particularly helpful for Ora Food MSMEs in re-evaluating cash flow estimates and making more informed investment decisions amid market uncertainty.

RESULTS AND DISCUSSION

The business environment is formed based on business objectives because it determines competitors and the competitive environment. Therefore, business actors need to understand and be aware of the surrounding environment to adapt and configure the strength of business management (Intyas *et al.*, 2022). The financial aspect of a business is the main factor in a business feasibility study because it shows the financial feasibility that significantly influences the sustainability of the business. The financial aspect provides an understanding of the allocation of finances for running a business. Investment and operational costs can affect a business's feasibility level. (Fauzi *et al.*, 2019). Suppose a business's financial feasibility is low. In that case, it will not be easy to get capital assistance from investors because it cannot provide significant economic growth for the business in the long term. (Intyas *et al.*, 2019; Putra & Intyas, 2022; Syafril *et al.*, 2022).

Financial feasibility is inseparable from the capital used in a business, which is also issued in the form of costs. Based on its working function, business capital is divided into fixed and working capital. Capital is the result of production used to produce further, emphasizing the value, purchasing power, or power to use or use contained in capital goods in the form of money or goods. Fixed capital is relatively permanent in a certain period with an amount that is not easily reduced or enlarged and experiences a turnover process in the long term (Riyanto, 2010). Fixed capital in this seaweed business can be seen in Table 1.

Table 1. Fixed Capital in MSMEs Ora Food Yogyakarta for 1 year

No	Description	Unit	Price (Rp)	Amount (Rp)
1	Sealer Machine	1	2,699,000	2,699,000
2	Scissors	7	5,000	35,000
3	Stainless Tray	2	12,000	24,000
4	Stainless Basin	2	36,000	72,000
5	Drain	5	13,500	67,500
6	Jar	10	22,000	220,000
7	Machine Exp date	1	635,000	635,000
8	Kitchen Scales	1	63,800	63,800
9	Rubber Sandals	6	17,000	102,000
10	Stove	1	278,000	278,000
11	Jumbo Steel Frying Pan	1	192,500	192,500
12	Jumbo Scoop	5	48,500	242,500
13	Spinner Machine	1	1,550,000	1,550,000
14	Aprons	4	6,000	24,000
15	Plastic Tub	30	13,000	390,000
16	Iron Shelf	1	763,000	763,000
17	Container Box	5	47,000	235,000
18	Plastic Chair	3	14,000	42,000
19	Head Cap	1	32,500	32,500
20	Gas cylinders	2	165,000	330,000
21	Plastic Gloves	2	35,000	70,000
22	Table	3	300,000	900,000
23	Car	1	189,300,000	189,300,000
24	Building	1	87,500,000	87,500,000
Total				285,767,800

The total fixed capital in this business is Rp. 285,767,800,-. The fixed capital used by this seaweed business does not require a large space or expensive equipment, except for the vehicle used for distributing raw material collection and product delivery. Some fairly important machines are stoves, steel pans, spinner machines, and sealer machines, while others are supporting equipment. Working capital is more flexible in amount, its composition is relatively variable and it experiences a turnover process in a short period (Riyanto, 2010). Working capital is considered very important because, generally, a business can run if it has much capital. However, the provision of capital must also be balanced with effective spending. If it is not managed correctly, the capital that has been issued will cause losses for the business (Muktiadji & Sastra, 2013). Working capital in this business can be seen in Table 2.

Table 2. Working Capital in MSMEs Ora Food Yogyakarta for 1 Year

No	Description	Amount (Rp)
1	Depreciation	30,524,567
2	Seaweed	2,100,000
3	Flour	132,000
4	Garlic Powder	144,000
5	Coriander	132,000
6	Oil	1,440,000
7	Original Seaweed Seasoning	660,000
8	Chili Powder	780,000
9	Pouch Packaging	6,000,000
10	Jar Packaging	1,185,000
11	Silica gel	257,580
12	LPG Gas Filling	240,000
13	Dish soap	144,000
14	Jar Stickers	300,000
15	Plastic Sealer	286,800
16	Fuel (Transport)	1,200,000
17	Employee salary	81,600,000
18	Electricity cost	2,400,000
19	Maintenance Costs	600,000
20	UN	1,200,000
21	Data Package	600,000
22	Vehicle Tax	2,400,000
Total		134,325,947

Table 3. Fixed Costs in MSMEs Ora Food Yogyakarta for 1 Year

No	Description	Amount (Rp)
Fixed Costs		
1	Depreciation	30,524,567
2	Employee salary	81,600,000
3	Electricity cost	2,400,000
4	Maintenance Costs	600,000
5	UN	1,200,000
6	Data Package	600,000
7	Vehicle Tax	2,400,000
Total Fixed Cost		119,324,567
Variable Costs		
1	Seaweed	2,100,000
2	Flour	132,000
3	Garlic Powder	144,000
4	Coriander	132,000
5	Oil	1,440,000
6	Original Seaweed Seasoning	660,000
7	Chili Powder	780,000
8	Pouch Packaging	6,000,000
9	Jar Packaging	1,185,000
10	Silica gel	257,580
11	LPG Gas Filling	240,000
12	Dish soap	144,000
13	Jar Stickers	300,000
14	Plastic Sealer	286,800
15	Fuel (Transport)	1,200,000
Total Variable Cost		15,001,380
Total cost		134,325,947

The working capital (table 2), requirement for this business is relatively high, amounting to IDR 134,325,947, with the largest components consisting of employee salaries and depreciation. The cost composition indicates that this is a labor-intensive business, as more than 60% of the total working capital is allocated to labor expenses. Although depreciation represents a significant portion, the dominance of salary expenditures reflects the strong reliance of the business's operations on labor intensity. The working capital is spent in the form of fixed and variable costs, which represent a typical cost structure in small-scale processing MSMEs. This finding is consistent with the study by (Murdiono *et al.*, 2023), which states that seaweed-processing MSMEs in Indonesia, particularly those operating in downstream sectors, generally face financing challenges due to the high working capital requirements associated with labor, raw materials, and basic infrastructure. Therefore, the cost structure, which is predominantly labor-related, reflects the labor-intensive characteristics commonly found in marine product processing MSMEs operating in non-industrial or non-coastal regions.

Costs are business costs that do not depend on the size of production, while variable costs are costs used for the production process with amounts that vary in proportion to the size of production produced (Soekartawi *et al.*, 1986). The total costs used in the X grass processing business can be seen in Table 3.

A key finding from the cost structure analysis reveals that approximately 89% of Ora Food's total working capital consists of fixed costs, most of which are attributed to employee salaries and depreciation. The cost structure of the Ora Food MSME is illustrated in Figure 1. This dominance of fixed costs reflects a high level of operating leverage, which refers to a condition where most operational costs are fixed and do not change with production volume. In such a situation, the business has the potential to generate significant profits when sales volume increases, as the fixed costs have already been covered and additional revenue directly contributes to net profit.

However, on the other hand, the risk of loss also increases if there is a decline in demand or a disruption in production, since fixed costs must still be paid even when revenue decreases. A cost structure of this nature makes the sustainability of the business highly dependent on sales stability, operational efficiency, and the ability to adapt to market changes. This is consistent with the findings of (Laapo *et al.*, 2022), who noted that a high proportion of fixed costs presents a major challenge to the sustainability of the seaweed processing industry during periods of fluctuating demand. Similarly, (Murdiono *et al.*, 2023) observed that marine product processing MSMEs with a high share of fixed costs face elevated operational risk and require strategies such as cost efficiency, product diversification, and market access strengthening to maintain long-term profitability.

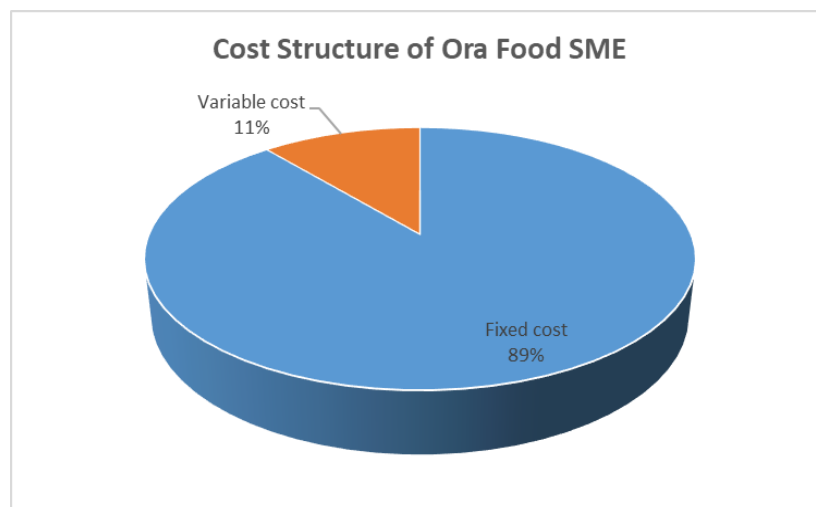


Figure 1. Cost Structure of Ora Food MSME

Fishery business income refers to the total value of all products generated within a certain period, including those sold, become by-products, or consumed by the business owner's household. Ora Food MSME generates income from four product variants: seaweed chips and sprinkled seaweed toppings, each offered in original and spicy flavors. These products are processed from dried seaweed through a simple production method that still requires precision to maintain quality. This finding is supported by (Prayetno *et al.*, 2025), who stated that seaweed-based product innovations such as chips can enhance added value and increase the income of business actors, while also having promising market potential at both local and national levels.

The sprinkled seaweed chips (table 4) have a higher selling price than regular seaweed chips, reflecting their position as a value-added product commonly used as a topping in Japanese dishes such as sushi, ramen, and donburi. This aligns with the findings of (Wendin & Undeland, 2020), who identified European consumer preferences for using seaweed to complement main meals, particularly within Asian cuisine. Meanwhile, regular seaweed chips are more often consumed directly as a light snack, with a more affordable price point to appeal to a broader market. A study by (Zheng *et al.*,

2024), supports this observation by showing that seaweed products in snack form are the top choice among American consumers due to their convenience, accessibility, and compatibility with modern lifestyles.

Table 4. Income from Seaweed Products of MSMEs Ora Food Yogyakarta for 1 Year

No	Types of products	Price (pcs)	Amount (Rp)
1	Original flavored seaweed chips (OFSC)	17,500	126,000,000
2	Spicy flavored seaweed chips (SFSC)	17,500	136,500,000
3	Original flavored seaweed chips sprinkled (OFCSS)	25,000	15,000,000
4	Spicy flavored seaweed chips sprinkled (SFSCS)	25,000	15,000,000
Total Revenue (Rp)			292,500,000

Interestingly, despite the higher price of sprinkled chips, the highest revenue is generated from sales of spicy-flavored regular seaweed chips. This indicates a strong consumer preference for ready-to-eat products with bold flavors, such as spicy ones, which are highly favored in the domestic market. Furthermore, (Zheng *et al.*, 2024) emphasize that products intended for direct consumption tend to have higher purchase frequency, resulting in greater total sales contributions despite lower unit prices. These findings are essential for informing MSME product development and marketing strategies, considering value addition, consumption patterns, and prevailing taste preferences in the market.

Table 5. Annual Profitability and Financial Feasibility of MSMEs Ora Food Yogyakarta

Analysis	Unit	Amount
Profitability Analysis		
BEP	Rp.	119,324,566
BEP _q OFSC	pcs	2,937
BEP _q SFSC	pcs	3,182
BEP _q OFCSS	pcs	245
BEP _q SFSCS	pcs	245
Net Profit	Rp.	158,174,053
R/C		2.18
RTC	%	95.42
Financial Feasibility of df 8% in 10 years		
NPV	Rp.	747,908,878
Net B/C		3.62
IRR	%	65.24
PP	Year	1.65

In the profitability analysis, there is a BEP value, which is the number of rupiah and units that must be sold to break even. It can be said that the business is profitable if the R/C is more than 1 and if the return to total capital (RTC) value is more than the current loan interest rate, then this business can be said to be strong enough to survive, the greater the profitability value, the stronger the business can survive. Moreover, financial feasibility can be seen in the long term by a positive NPV, a B/C ratio greater than one at all discount rates, and an IRR more significant than the discount factor. Based on table 5, it can be explained as follows:

1. The results of the profitability analysis indicate that the seaweed chip processing business of Ora Food is highly profitable. The Break-Even Point (BEP) is achieved at IDR 119,324,566, which is equivalent to 2,937 units for the OFSC product and 3,182 units for the SFSC product. Meanwhile, for the sprinkled seaweed chip products (OFCSS and SFSCS), the BEP is reached at a volume of 245 units. These figures suggest that the business can quickly cover its production costs and generate profit. This is further supported by the R/C Ratio value of 2.18, indicating that every one rupiah of production cost generates a return of IDR 2.18 in revenue. This finding is in line with the study by (Fatonny *et al.*, 2023), which showed that *Eucheuma cottonii* seaweed farming in Takalar Regency resulted in an R/C ratio of 2.3, indicating strong business feasibility and profitability, with an average profit of IDR 17.5 million per cycle per hectare. In addition, the Return to Total Capital (RTC) value of 95.42% far exceeds the commercial loan interest rate of 6%. This is consistent with the findings of (Dewi Surya & Intyas, 2022) in their study of the "TATUCHI" Crispy Tuna Tofu business, which reported an RTC of 22% and was considered financially viable, indicating high efficiency and resilience in managing capital productively.
2. From a long-term financial feasibility perspective, calculations based on a discount rate of 8% over 10 years show a Net Present Value (NPV) of IDR 747,908,878, a Net Benefit-Cost (B/C) Ratio of 3.62, an Internal Rate of Return (IRR) of 65.24%, and a Payback Period (PP) of 1.65 years. The IRR value significantly exceeds the discount rate, indicating that the project is highly financially viable. This finding is supported by the study of (Intyas *et al.*, 2019) on home-based fish-smoking industries in Tasikmadu, which showed that Poklashar member enterprises achieved an NPV of IDR 218,881,228, a Net B/C Ratio of 2.62, an IRR of 45%, and a Payback Period

of 2.2 years at a 12% discount rate. In comparison, Ora Food's higher NPV and IRR suggest faster returns and greater investment potential. Therefore, these financial feasibility indicators reinforce Ora Food's position as an MSME with a highly competitive level of profitability and capital efficiency in the processed food sector. This finding demonstrates that with an appropriate cost structure and production scale, seaweed processing has significant economic potential (Gumilar *et al.*, 2024).

Furthermore, a sensitivity analysis was conducted on the seaweed business using three condition scenarios, as shown in Table 6.

Table 6. Sensitivity Analysis of Seaweed Business

No	Assumptions	(%)	NPV (Rp)	Net B/C	IRR (%)	PP (year)
1.	Increased Costs	138	-94,954,382	0.98	8.47	6.85
2.	Decreased Benefits	41	-78,838,144	0.99	8.86	8.14
3.	Increased Costs	56	-6,771,116	0.98	5.49	7.59
	Decreased Benefits	31				

Sensitivity analysis was used to evaluate the impact on the business by predicting possible optimistic and pessimistic conditions (Oraee *et al.*, 2011). It can be seen from Table 2 that the results of the sensitivity analysis on, it is known:

1. Scenario 1, on the assumption of rising costs and fixed benefits, shows that the assumption of a 138% increase in costs only results in an unviable financial condition. This shows that the business is not sensitive to cost increases up to a minimum limit of 138%.
2. Scenario 2 on the assumption of fixed costs and decreasing benefits shows that if benefits decrease by 41%, it will result in an unviable financial condition. This shows that the business is quite sensitive to a decrease in revenue (decreased sales) of at least 41%.
3. Scenario 3, assuming a cost increase of 56% and a benefit decrease of 31%, shows that the business is not feasible. This shows that the business is quite sensitive if there is a minimum cost increase of 56% and a minimum revenue decrease of 31%.

Sensitivity analysis is used to evaluate the resilience of a business against changes in costs and revenues under both optimistic and pessimistic scenarios. The results show that Ora Food's business is not sensitive to cost increases up to a threshold of 138%, meaning it remains financially feasible even in the face of significant production cost surges. However, under the scenario of a 41% decline in revenue, the business becomes financially unfeasible. As illustrated in Figure 2, the NPV curve for the revenue decline scenario is noticeably steeper than that of the cost increase scenario. This indicates that the business is significantly more vulnerable to decreases in revenue than to increases in costs.

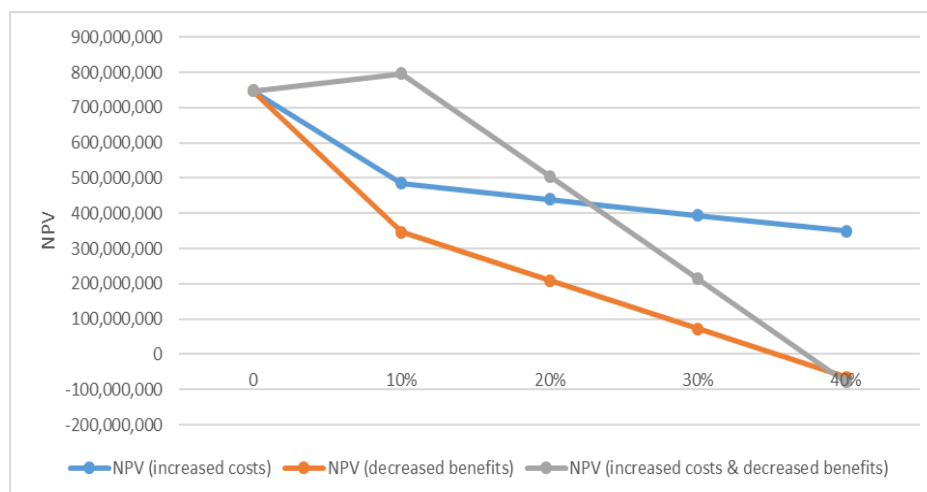


Figure 2. NPV Sensitivity

This vulnerability to revenue decline is closely related to the previously analyzed cost structure, in which 89% of total working capital consists of fixed costs. Such a high proportion of fixed costs results in a high operating leverage, meaning that the majority of the costs cannot be reduced even if sales volume decreases. Consequently, when revenue declines, the business cannot automatically adjust its cost burden, causing profit margins to erode quickly and potentially turn into losses.

The combined scenario in the sensitivity analysis, involving a 40% increase in costs and a 40% decrease in revenue, also shows the most drastic decline in NPV, which turns negative even before reaching the 40% threshold. This further confirms that a high proportion of fixed costs increases financial risk when the market is under pressure. The link

between cost structure and sensitivity outcomes highlights that revenue stability is a key factor in maintaining business feasibility. Consequently, risk management strategies such as product diversification, cost efficiency, and market strengthening are essential to ensure long-term business sustainability (Mulyati & Geldermann, 2017).

CONCLUSION

Ora Food SMSEs is evaluated based on profitability analysis and financial feasibility. Profitability analysis: The Revenue Cost Ratio (R/C) value is 2.18 (>1), indicating that the business is profitable in the short term. The Return to Total Capital is 95.42% (>6%), which means the business can quickly recover its capital in the short term. In the long-term analysis, financial feasibility: the Net Present Value (NPV) is IDR 747,908,878, and the Net Benefit-Cost Ratio (Net B/C) is 3.62 (>1), signifying that the business is profitable in the long run. The Internal Rate of Return (IRR) is 65%, which exceeds the loan interest rate (6%), indicating a strong capacity to recover capital over the long term. Based on the Net B/C and IRR values, it can be concluded that the business is feasible to continue, with an estimated payback period (PP) of 1.65 years. The sensitivity analysis, conducted using three sensitivity scenarios, concludes that the business is not sensitive to a cost increase of up to 138%. However, it becomes significantly sensitive if a cost increase is combined with a revenue decline (sales decrease) beyond a certain threshold (minimum 31%). Therefore, it is recommended that sales at current production levels be maintained or increased by optimizing social media marketing to reach a larger market.

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