

ANALYSIS OF INCOME AND EFFICIENCY OF SHRIMP FLOSS PRODUCT INNOVATION AS AN EFFORT TO UTILIZATE SHRIMP RECEK WASTE IN AYAKH UGAN MSME'S

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Accepted : 01 August 2025

Published : 20 September 2025

Revised : 11 August 2025

DOI : <https://doi.org/10.54443/ijset.v4i11.1169>

Accepted : 13 September 2025

Publish Link : <https://www.ijset.org/index.php/ijset/index>

Abstract

This study aims to analyze the income and efficiency of the shrimp floss product innovation business based on shrimp waste at Ayakah Ugan MSMEs, Ogan Komering Ulu Regency. Shrimp waste, which has been considered to have no economic value and has the potential to pollute the environment, is processed into shredded shrimp as an effort to diversify products while reducing and utilizing waste. The method in this study is an experimental method with a case study approach, where researchers conducted a trial of shrimp floss production using shrimp waste as the raw material. Data were analyzed descriptively quantitatively by calculating production costs, revenues, income, operating profits and business efficiency using *the revenue cost ratio* (R/C ratio). The results of the analysis show that the shrimp floss processing innovation product has an R/C ratio of 2.68. This value indicates that this business is efficient and feasible to be developed because every expenditure of 1 rupiah can generate income of more than 1 rupiah. The average income per production is Rp. 626,777. Based on the results of the study, the shrimp floss processing innovation product business is proven to be financially feasible and has great potential for further development. This innovation not only provides financial benefits for MSMEs but also supports the principles of a circular economy by utilizing fishery waste into value-added products.

Keywords: *MSMEs, Business Efficiency, Income, Shrimp Recek, Shrimp Floss*

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) have a strategic role in supporting national economic development. Based on data from the Ministry of Cooperatives and SMEs (2020), MSMEs contribute more from 60% to Product National Gross Domestic Product (GDP) and absorb more from 96% of power work. Contribution This confirm the importance of MSMEs in increase growth economy at a time reduce number unemployment . According to Suci (2020), the existence of MSMEs also has function social Because capable strengthen resilience economy local , improve equality development , and encourage empowerment society . In the era of globalization , power MSME competitiveness is largely determined by ability innovation products , market access , and management source efficient power (Hasan et al., 2021; Sari & Suryani, 2022) . One of challenge The biggest problem faced by MSMEs is limitations innovation products and management waste production . In the sector food , especially fisheries , waste results production often thrown away so just so that cause problem environment . Processing industry Shrimp , for example , produces waste in the form of head , skin , and tail potential shrimp pollute environment waters If No handled with good (Huda et al., 2020). In fact , waste shrimp Still contains protein,

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minerals, and compound bioactives that can be processed to become products with added value (Pratiwi, 2021). Wahyuni et al.'s (2020) research confirms that waste from previous fisheries, which was previously considered worthless, can be processed into various food products, both food and non-food, with a high economic value. A number of innovation-based waste shrimp products have proven successful. Putri Hermanto & Nengseh (2020) developed powder broth from waste shrimp that is rich in nutrition. Soraya et al. (2022) utilized shrimp skin as a material base for a cleaner, environmentally friendly product. Asni et al. (2023) formulated meatballs with the addition of shrimp skin as a calcium source. Hukhairi et al. (2024) through community service programs publicly proved that processing fish waste from material waste can increase income at a village public skills time. In addition, research by Sulfiana et al. (2024) also showed that training in manufacturing shredded shrimp meat (PKK) based not only produces new products, but also improves the independence of the household economy. This is in line with findings of Rahmawati & Nugroho (2021) which emphasize that innovation-based waste fishery products are capable of expanding the market for MSME products at the same time, strengthening their competitiveness. One of the potential innovations developed in this research is the processing of shrimp scraps into shredded shrimp. Shredded shrimp is one of the... form of product processed potential food developed in the context of waste utilization in fisheries. This product has its own dry texture, savory taste, long-term storage, and is practical to consume (Winarno, 2020). If during this shredded meat is identical with material standard meat from cow or chicken, then the utilization of small change shrimp as material standard shredded meat becomes a unique innovation at a time when the market is economically high. According to Putri (2021), diversification of products based on waste fishery not only increases the variety of products on the market, but also provides a plus for small business owners. The study by Rizal et al. (2021) even mentions that diversification of products processed from waste plays an important role in strengthening local food resilience.

Ayakah Ugan MSME in Ogan Komering Ulu Regency was selected as a partner for the implementation of innovation in processing small change shrimp into shredded meat. This innovation gives double benefits: first, from the economic side, MSMEs are able to reduce material costs and create new competitive products; second, from the environmental side, waste that was previously a potential pollutant can be utilized; third, from the social side, MSMEs strengthen their image as businesses oriented towards sustainability and support the Sustainable Development Goals (SDGs) agenda point 12 regarding responsible consumption and production (Nugraha, 2022). Innovation in shredded meat from waste small change shrimp has the potential to be developed and marketed through the Ayakh Ugan MSME. However, despite its significant potential, the business's feasibility still requires an in-depth review. Therefore, this study aims to analyze the costs and revenues, as well as the efficiency of the shrimp waste processing business.

LITERATURE REVIEW

1. MSMEs and Their Role in Economics

MSMEs are the backbone of the Indonesian economy and are capable of staying in the middle during various crises. According to the Central Statistics Agency (BPS, 2021), MSMEs absorb about 97% of the national workforce and contribute more than 60% of GDP. This is not only important in an economic way, but also has a social impact because they play a role in empowerment, society, and equality development (Utami et al., 2022). In the era of industry 4.0, MSMEs are required to keep going through transformation, good through innovation products, utilization of digital technology, as well as improvement of business efficiency (Riyanti & Pramudiana, 2021). The study by Hidayat & Nurfadilah (2023) confirms that the success of MSMEs is not only determined by capital, but also by creativity in the process of local products becoming products with added value.

2. Waste Shrimp and Potential Its use

The fishing industry, in particular shrimp, is one of the sectors that provide a significant contribution to the Indonesian economy, but it also produces a significant amount of waste. Shrimp skin, head, and tail are usually thrown away and cause environmental pollution (Yunita et al., 2021). In fact, waste shrimp has a significant potential because it contains chitin, calcium, and protein, which are still present and can be utilized (Ismail et al., 2022). Some studies show that waste shrimp can be made into food products like crackers, flavorings, and alternative feeds (Flora et al., 2024), even also used in manufacturing bioplastic friendly environments (Rahayu et al., 2021). This opens up an opportunity for innovation products that can help MSMEs at the same time support sustainable waste management.

3. Abon Products as Food Innovation

Abon is one of the traditional food products that has practical characteristics, long-lasting, and loved by many circles. Initially, shredded meat was more known with a base of cow or chicken, but now there are many innovations based on fish and other sea products (Susilawati et al., 2022). Innovation in shredded meat from alternative materials like oysters (Yulianto & Fikri, 2021) and catfish (

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Salsabila et al., 2022) have proven increase variation MSME products and expanding the market. Products shredded meat shrimp from small change shrimp be one of form unique diversification , because No only utilise waste fisheries , but also produces product worth nutrition high . According to Nurhidayati et al. (2023), diversification product food based material local and waste is an effective strategy For strengthen Power MSME competitiveness .

4. Analysis Income in MSMEs

Income is one of the indicator success efforts that reflect the ability of MSMEs in get profit . According to Sunaryo (2020), income business counted from difference between total revenue and costs production . Analysis income is very important in determine sustainability business , especially in the food MSME sector which is highly dependent on efficiency management costs (Ningsih & Setiawan, 2022). Research Sulistyowati & Handayani (2021) showed that improvement income in MSMEs can achieved through innovation product based source Power local , temporary Wulandari et al.'s (2023) study confirms importance mentoring and training management business For increase efficiency costs and income of MSMEs.

5. Analysis Business Efficiency (R/C Ratio)

Efficiency business be one of indicator main eligibility business small . R/C ratio analysis is used For measure to what extent is acceptance business capable cover cost production . According to Dewi & Suryanto (2020), if the R/C ratio > 1 , then business stated feasible and profitable . On the other hand , an R/C value < 1 indicates that business No efficient . Research Priyanto et al. (2022) regarding business tuna floss shows The R/C ratio value is 2.01, which means every Rp1 of costs incurred produce revenue of Rp2.01. Suryono et al. (2023) added that effective R/C ratio analysis used in evaluate business processing food scale small , because give description simple However accurate about efficiency business .

METHOD

This research used an experimental method with a case study approach on the Ayakh Ugan MSME in Ogan Komering Ulu Regency as an innovation partner. The experimental method was chosen because the research was conducted through a trial of shrimp floss production based on shrimp waste, an innovation of the researchers. The resulting products were then analyzed descriptively quantitatively to assess the financial aspects of the business. Data analysis was performed by calculating the cost structure of the shrimp floss business using the following formula:

$$TC = FC + VC$$

Where :

TC: Total costs incurred in one production process (Rp/production process).

FC: Fixed costs incurred in one production process (Rp/production process)

VC: Variable costs that arise in one production process (Rp/product process)

To calculate the income structure of the shrimp floss business, the following formula is used: $TR = P \times Q$

Information:

TR : Total revenue (Rp per production process)

P: Product price per unit (Rp per kg)

Q : Number of products sold (kg)

Meanwhile, the profit structure or earnings of the shrimp cracker business can be calculated using the formula:

$$I = TR - TC$$

Information:

I: Business profit (Rp per production process)

TR : Total revenue (Rp per production process)

TC : Total production cost (Rp per production process)

According to (Wahdiy et al., 2020), the efficiency of a business can be measured by comparing profits or revenues with the total costs incurred, to answer the second objective, namely, using the following formula:

$$R/C = TR/TC$$

Decision criteria:

If $R/C = 1$, then the shrimp processing business is at the break-even point.

If $R/C > 1$, then the shrimp processing business is considered efficient or profitable.

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If $R/C < 1$, then the shrimp processing business is considered inefficient or making a loss.

RESULTS AND DISCUSSION

Production costs include all expenses related to the process of manufacturing goods and providing services (Gonibala et., 2019). The production costs of processed shrimp floss products include the costs of the main raw materials, namely shrimp floss, spices, and labor paid to workers involved in the entire production process. Based on production volume, costs can be classified into fixed costs and variable costs. Fixed costs are costs whose total amount does not change regardless of the level of activity, while variable costs are costs that change proportionally with the level of business activity. In other words, the variable cost per unit remains unchanged, so the higher the volume of activity, the greater the total costs incurred. Conversely, if the volume of activity decreases, the total costs will also decrease. To ensure smooth and sustainable production, business actors need to pay attention to fixed costs and variable costs to achieve profitability (Assegaf, 2019).

Table 1. Depreciation of shrimp floss production equipment

No	Equipment	Fixed Cost Depreciation/ 1 time Production
1	Wok	27.39
2	spatula	13.69
3	Stove	164.38
4	Basin	6,849
5	Knife	10.95
Amount		223.28

Description: Assumptions: (1) total production of shredded shrimp: 100 pouches weighing 150 grams (2) 1 production time: 1 day

Depreciation expense is an expense allocated to reflect the decline in the value of fixed assets over time. Table 1 shows that the depreciation of production equipment, or the cost of equipment used in the shrimp floss business as an innovative product for one production run, is Rp 223.28. This expense includes the depreciation of a frying pan of Rp 27.39, a spatula of Rp 13.69, a stove of Rp 164.38, a basin of Rp 6,849, and a knife of Rp 10.95.

Table 2. Depreciation of shrimp floss production equipment

No	Type of Fee	Number of Uses per Production Process	Unit	Cost (Rp/Production Process)
1	Shrimp Recek	5,000	Gram	50,000
2	Dried Red Chilies	2,500	Gram	20,000
3	Garlic	2,500	Gram	18,000
4	Red onion	2,500	Gram	20,000
5	Flavoring	300	Gram	15,000
6	Fine granulated sugar	250	Gram	8,000
7	Salt	500	Gram	2,000
8	Standing Pouch	100	Pcs	30,000
9	Sticker	100	Sheet	50,000
10	Water	1	Liter	10,000
11	Labor	1	HOK	150,000
Amount				373,000

Description: Assumptions: (1) total production of shredded shrimp: 100 pouches weighing 150 grams (2) 1 production time: 1 day

Variable costs are the total additional costs for each unit produced (Assegaf, 2019). In Table 2. The average variable cost for one production of shredded shrimp is Rp. Rp. 373,000, which includes shrimp Rp. 50,000, curly red chili Rp. 20,000, garlic Rp. 18,000, shallots Rp. 20,000, flavoring Rp. 15,000, refined sugar Rp. 8,000, salt Rp. 2,000, standing pouch Rp. 30,000, stickers Rp. 50,000, water Rp. 10,000 and labor Rp. 150,000.

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Table 3. Total Cost of Shrimp Floss Production

No	Description	Production Cost (Rp per production process)
1	Fixed Costs	223.28
2	Variable Costs	373,000
Amount		373,223.28

Total costs include all expenses required to produce a product, which is a combination of fixed and variable costs (Ibrahim et al., 2021). Based on Table 3, the total cost for one production run is IDR 373,223.28, consisting of fixed costs of IDR 223.38 and variable costs of IDR 373,000.

Table 4. Average production volume, cost of goods sold, product selling price, production costs, total revenue, and income of shrimp floss business in one production run.

No	Description	Unit	Amount
1	Production	Gram	15,000
2	Cost of goods sold	Rp/pouch	3,732
3	Selling price	Rp/pouch	10,000
4	Production cost	Rp/one production	373,223.38
5	Reception	Rp/one production	1,000,000
6	Profit	Rp/one production	626,777
R/C			2.68

Based on Table 5. It can be seen that the average production per production is 100 pouches, with a selling weight of 150 grams and a cost of goods sold of Rp. 3,732 while the selling price is Rp. 10,000. The production costs incurred for one production are Rp. 373,223.38 resulting in revenue of Rp. 1,000,000 and a profit of Rp. 627,777. The R/C ratio value obtained is 2.68 indicating that every 1 rupiah spent in the processing process generates an income of 2.68 rupiah. This indicates that the shrimp floss processing business is classified as efficient (R/C ratio > 1) and has the potential to be further developed.

CONCLUSION

The results of the study indicate that the innovation of processed shrimp floss has a good level of efficiency based on the R/C ratio value of 2.68. This value indicates that every expenditure of 1 rupiah in the production process generates income of more than 1 rupiah, so this business is classified as efficient (R/C ratio > 1). The average income for one production is Rp. 626,777 with sales of 100 pouch (weighing 150 grams). In addition to providing added economic value, these results also prove that shrimp floss has the potential to be processed into food products that are competitive in the market. Thus, the shrimp floss business not only provides financial benefits for MSMEs but also supports efforts to manage fishery waste sustainably.

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