

MARKETING CHARACTERISTICS AND VALUE-ADDED ANALYSIS OF PROCESSED FISHERY PRODUCTS IN SMES: A CASE STUDY OF PANGANDARAN, WEST JAVA, INDONESIA

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ABSTRACT

Fisheries product processing SMEs play a crucial role in enhancing the value added and competitiveness of fisheries products. This study aims to analyze the marketing characteristics and value added of processed fisheries products among SMEs in Pangandaran, West Java. The study employed a quantitative descriptive method, collecting data through observation, interviews, and documentation from four SMEs producing fish crackers, fish floss, salted jambal roti fish, and processed seaweed. Results indicate that market segmentation encompasses geographical, demographic, psychographic, and behavioral aspects. Competition varies from low to moderate depending on product uniqueness, while pricing is generally cost-based and promotional strategies are transitioning from traditional to digital approaches. Value-added analysis using the Hayami method shows that all four SMEs generate positive value added: Ulva-Q Seaweed achieves the highest value-added ratio (89.39%), Ulva-Q Seaweed records the highest absolute profit (Rp 623,875/kg), Bu Encum Fish Floss achieves the highest entrepreneur's profit margin (86.67%), and Padasuka Crackers demonstrates the highest labor share (33.33%). These findings indicate that product innovation, digital marketing adoption, and effective value-added strategies are important for improving the competitiveness and sustainability of fisheries SMEs in Pangandaran.

Keyword: Fisheries SMEs, value-added analysis, Hayami method, marketing strategy, processed fishery products, Pangandaran

1. INTRODUCTION

Indonesia, as a maritime nation, possesses vast fisheries resources from both capture and aquaculture sectors. However, the utilization of fisheries products remains largely dominated by raw material sales, resulting in relatively low economic value. Processing fisheries products into value-added goods constitutes a critical strategy for improving the welfare of coastal communities (KKP, 2020). The development of fisheries-based Small and Medium Enterprises (SMEs) has become a key driver of local economies. Processed products such as fish crackers, fish floss, and salted fish offer opportunities for increased value added through processing, packaging, and marketing (Hidayati et al., 2019).

The success of fisheries SME development is closely tied to marketing strategies employed. Limitations in reaching broader markets, conducting promotions, and leveraging digital

technology remain major obstacles. Packaging constitutes a crucial factor in enhancing product value, as attractive and hygienic packaging boosts consumer interest and expands market reach (Hafiludin et al., 2025). Furthermore, value-added analysis is essential to measure the economic benefits derived from transforming raw materials into finished products (Hayami et al., 1987).

Pangandaran Regency, on the southern coast of West Java, is a productive fisheries center in the province. Several SMEs process local commodities including layur fish (*Trichiurus* sp.), jambal roti fish (*Johnius* sp.), and Ulva seaweed into marketable processed products. Despite their potential, these SMEs face multidimensional challenges in marketing, capital access, production technology, and human resource capacity.

This study therefore aims to: (1) analyze the marketing characteristics of fisheries SMEs in Pangandaran, including market segmentation,

competition level, pricing strategy, and promotional approach; (2) calculate and analyze the value added generated from fish processing using the Hayami method; and (3) identify the main constraints faced by SMEs in marketing and production.

2. METHOD

This study employed a quantitative descriptive approach to analyze the marketing characteristics and value added of fisheries-based processed product SMEs in Pangandaran Regency, West Java. The research location was selected through purposive sampling, considering the area's significant fisheries potential. A sample of four SME operators was selected based on their active engagement in product processing and marketing: (1) Padasuka Fish Crackers; (2) Bu Encum Jambal Roti Fish Floss; (3) Ulva-Q Seaweed Products; and (4) Husna Jambal Roti Salted Fish.

Data were collected through observation, semi-structured interviews, and documentation review.

Primary data were obtained directly from SME operators, while secondary data were sourced from scientific literature, government agency reports, and official fisheries statistics. Marketing analysis was conducted descriptively, examining market segmentation dimensions, competition levels, pricing strategies, distribution channels, and promotional methods (Kotler & Keller, 2016). Data validity was ensured through source triangulation and member checks (Creswell & Poth, 2018).

Value-added analysis was performed using the Hayami method (Hayami et al., 1987), calculated as: $VA = OV - RV - IC$, where VA = Value Added (Rp/kg); OV = Output Value (Rp/kg); RV = Raw Material Value (Rp/kg); IC = Intermediate Input Costs (Rp/kg). The components and structure are presented in Table 1 below. Competitive analysis applied Porter's Five Forces framework (Porter, 1980), while Kotler & Keller's (2016) marketing mix framework guided the marketing analysis.

No.	Variable	Formula / Notes
I. OUTPUT, INPUT, AND PRICES		
1	Output (kg)	A
2	Input (kg)	B
3	Labor (HOK)	C
4	Conversion Factor	$D = A/B$
5	Labor Coefficient (HOK/kg)	$E = C/B$
6	Output Price (Rp/kg)	F
7	Labor Wages (Rp/HOK)	G
II. REVENUE AND PROFIT		
8	Raw Material Price (Rp/kg)	H
9	Other Input Costs (Rp/kg)	I
10	Output Value (Rp/kg)	$J = D \times F$
11	a. Value Added (Rp/kg) b. Value-Added Ratio (%)	$K = J - H - I$ $L = (K/J) \times 100\%$

12	a. Labor Income (Rp/kg) b. Labor Share (%)	$M = E \times G$ $N = (M/K) \times 100\%$
13	a. Profit (Rp/kg) b. Profit Margin (%)	$O = K - M$ $P = (O/K) \times 100\%$
III. RETURN TO PRODUCTION FACTORS		
14	Margin (Rp/kg) a. Labor Income (%) b. Other Input Contribution (%) c. Entrepreneur's Profit (%)	$Q = J - H$ $R = (M/Q) \times 100\%$ $S = (I/Q) \times 100\%$ $T = (O/Q) \times 100\%$

Table 1. Hayami Method Value-Added Analysis Structure

3. RESULTS AND DISCUSSION

3.1. Overview of SME Respondents

Four fisheries-based processed goods SMEs in Pangandaran Regency were analyzed in this study. Padasuka Fish Crackers is a long-established enterprise with a distribution network spanning Pangandaran, Tasikmalaya, and Jakarta, relying on layur fish crackers as its primary commodity. Bu Encum's Jambal Roti Fish Floss is an innovative SME processing jambal roti fish into abon, a product previously unavailable in the region, marketed through Shopee marketplace and souvenir shops reaching as far as Batam City. Ulva-Q Seaweed Products develops health-oriented snacks from fresh Ulva seaweed sourced from Karapyak Beach, targeting tourist and health-conscious consumer segments. Husna Jambal Roti Salted Fish focuses on traditional salted fish processing for local and regional markets using conventional production and direct distribution methods. Each SME possesses distinct

competitive advantages, product innovation, use of local raw materials, and different marketing strategies, yet all share limitations in technology, capital, and digital marketing capacity.

3.2. Market Segmentation

Market segmentation is the process of dividing the market into distinct buyer groups based on specific characteristics, needs, or behaviors (Kotler & Keller, 2016). The four SMEs exhibit segmentation patterns covering geographic, demographic, psychographic, and behavioral dimensions at varying levels of sophistication. Padasuka Crackers and Husna Salted Fish apply undifferentiated marketing targeting broad demographics with organically developed segmentation over decades. Bu Encum combines undifferentiated targeting with strong product differentiation based on unique local raw materials. Ulva-Q demonstrates the most advanced approach, implementing a differentiated strategy targeting health-conscious consumers and tourists, consistent with Rahmawati et al. (2021) and Tjiptono & Chandra (2017).

Dimension	Padasuka Crackers	Bu Encum Fish Floss	Ulva-Q Seaweed	Husna Salted Fish
Geographic	Pangandaran, Tasikmalaya, Jakarta (offline)	Pangandaran, national via Shopee, to Batam City	Tourist area of Pangandaran; online potential	Local Pangandaran; coastal traditional market
Demographic	All demographics; households fond	All ages; no demographic restrictions	Teenagers, young adults, health-conscious tourists	All ages; homemakers seeking convenient side dishes

	of traditional snacks			
Psychographic	Traditional product lovers; loyalty to local long-standing brands	Seeks high-nutrition, distinctive regional products	Health-conscious; prefers innovative, natural products	Salted fish fans; value-for-money orientation
Behavioral	Daily & souvenir purchases; variety by product type/color	Daily & souvenir; bonus loyalty system (buy more, get more)	Impulse tourist purchases; repeat health-conscious buyers	Routine daily use; seasonal souvenir purchases by tourists
Channel	Offline: souvenir shops, traditional market, distributors	Offline: home storefront & souvenir shops; Online: Shopee	Offline: tourist-area kiosk; Online: social media (IG, WA)	Offline: local market, souvenir shops, direct from production site
Strategy Level	Undifferentiated; organic segmentation (~30 years)	Undifferentiated + strong product differentiation	Differentiated; niche targeting (most advanced)	Undifferentiated; limited local-regional traditional scope

Table 2. Market Segmentation Comparison of Four Fisheries SMEs in Pangandaran

Based on Table 2, the four SMEs have penetrated markets outside Pangandaran to varying extents. Padasuka Crackers has the widest offline distribution (Tasikmalaya to Jakarta). Bu Encum reaches the national market via Shopee, extending to Batam City. Ulva-Q relies on tourists with digital expansion potential, while Husna Salted Fish remains focused on local and regional markets. The most advanced segmentation is demonstrated by Ulva-Q (differentiated strategy), followed by Bu Encum (undifferentiated with strong product differentiation), while Padasuka Crackers and Husna Ikan Asin maintain traditional but well-established segmentation grounded in long-term customer loyalty. All four SMEs need to evolve toward data-driven segmentation to optimize market reach in the digital era (Sumarwan, 2015).

3.3. Competitive Analysis

Competitive analysis aims to identify a business's competitive position in the market and develop strategies to address competitors (Porter, 1980).

Applying Porter's Five Forces framework, the competitive positions of the four SMEs show distinct characteristics. Padasuka Crackers and Bu Encum occupy near-monopoly positions in their respective product categories within Pangandaran, supported by unique local raw materials and established reputations. The use of jambal roti fish, a commodity unique to Pangandaran, gives Bu Encum high differentiation that out-of-region producers cannot easily replicate. Husna Ikan Asin faces moderate competition from larger, longer-established kiosks, but maintains competitiveness through halal certification, NIB registration, and premium quality standards. Ulva-Q operates in a low-competition niche in direct product terms but faces indirect competition from the expanding healthy snack category including imported nori (Siregar et al., 2022). Research by Suseno et al. (2022) confirms that competition in the coastal West Java fisheries SME sector occurs both horizontally among similar producers and vertically along the value chain involving fishermen, collectors, traders, and end consumers. Yunita et al. (2025) assert that SMEs creating

added value through product differentiation possess more sustainable competitiveness than those relying solely on cost advantages.

Competitive Aspect	Padasuka Crackers	Bu Encum Floss	Ulva-Q Seaweed	Husna Salted Fish
Main Product	Layur fish crackers	Jambal roti fish floss (abon)	Ulva seaweed snacks	Jambal roti salted fish
Market Coverage	Pangandaran, Tasikmalaya, Jakarta	Pangandaran, Batam, national marketplace	Pangandaran & surrounding tourist areas	Local Pangandaran
Direct Competition	Low (near-monopoly for layur crackers locally)	Low (unique jambal roti floss; no direct local rival)	Low (unique Ulva niche product)	Moderate (competing with larger, older kiosks)
Threat New Entrants	Low (30-year reputation barrier; family recipe)	High (relatively simple floss production process)	Moderate (specialized seaweed technique needed)	Medium-High (low initial capital required)
Substitute Products	Moderate (fish crackers from outside region)	Moderate-High (various national fish/meat floss brands)	High (healthy snacks, imported nori, nut snacks)	Moderate (other types of salted fish)
Supplier Power	Low (local fish supply relatively stable)	High (jambal roti is seasonal; limited cold storage)	Low (free natural Ulva harvest from Karapyak Beach)	High (jambal roti seasonal; supply fluctuates)
Buyer Power	Moderate	Moderate (broad network reduces buyer dependence)	Moderate (unique product reduces substitution)	Moderate (government-regulated pricing framework)
Key Advantage	30-yr reputation; unique family recipe; loyal customers	Unique raw material; Shopee digital reach;	Innovative Ulva use; high differentiation; health positioning	Halal cert & NIB; premium quality; personalized service

		modern packaging		
Key Weakness	No social media; made-to-order limits scalability	Limited cold storage; raw material supply constraint	Weather/season dependence; small scale; not fully digital	Limited trained workforce; no e-commerce presence
Overall Position	Stable local monopoly; needs modernization	Competitive; strong distribution; expansion potential	Innovative; great opportunity; scaling	Growing; needs market expansion & certification

Table 3. Competitive Analysis of Four Fisheries SMEs (Porter's Five Forces)

3.4. Pricing Strategy

Pricing is one of the most critical marketing decisions because it directly affects sales volume and business profitability (Kotler & Keller, 2016). Based on field observations, all four SMEs predominantly apply cost-based pricing, setting prices based on total production costs plus a profit margin. This approach is relatively simple and easy for SMEs to implement, although it tends to be less responsive to market dynamics. Padasuka

Crackers uses multiple-unit pricing with variations by package size and quantity. Husna Ikan Asin applies tiered pricing differentiating standard and premium quality products. Bu Encum adopts cost-plus pricing by adding a fixed margin to total production costs. Ulva-Q demonstrates a more adaptive approach combining cost-based and market-based pricing, adjusting for consumer purchasing power and reseller margins. None has yet fully adopted value-based pricing, a significant gap for leveraging the premium perception of unique local fishery products (Kotler & Keller, 2016).

SME	Approach	Key Determining Factors	Strategy & Notes
Padasuka Fish Crackers	Cost-based pricing	Raw material cost, labor, production overhead	Multiple-unit pricing; prices vary by package size and quantity
Husna Jambal Salted Fish	Cost-based + quality-adjusted	Quality of raw materials and processing method	Tiered/lining pricing; standard vs. premium product grades
Bu Encum Fish Floss	Cost-based pricing	Production costs and labor costs	Cost-plus pricing; fixed profit margin added to total cost
Ulva-Q Seaweed Products	Cost-based + market-based	Production costs, consumer purchasing power, reseller margin	Adaptive market-based pricing; differentiated by channel

Table 4. Pricing Strategy Comparison of Fisheries SMEs in Pangandaran

3.5. Promotion Strategy

Promotion is a marketing communication activity aimed at conveying information, influencing, and persuading consumers to make purchases (Kotler & Keller, 2016). Based on field observations, the

promotional strategies of the four SMEs show variations in the use of both traditional and digital methods. Padasuka Crackers relies exclusively on word-of-mouth and personal selling, effective for local retention but limited for broader expansion. Husna Ikan Asin is in early transition, combining personal selling through souvenir shops with limited marketplace usage. Bu Encum has achieved more advanced integration through active Shopee management and social media

engagement. Ulva-Q focuses primarily on digital channels via Shopee and Lazada, supplemented by discount and bundled offers. Overall, limited digital literacy, human resources, and distribution management are the main factors hindering optimization of digital-based promotions. Rahmawati et al. (2021) confirm that digital marketing adoption significantly improves SME performance and market reach in the Indonesian fisheries sector.

SME	Approach	Form of Promotion	Media Used	Notes
Padasuka Fish Crackers	Traditional	Word of mouth, personal selling	Direct sales, face-to-face	Local market focus; no digital presence
Husna Jambal	Traditional + limited digital	Personal selling, sales promotion	Souvenir shops, simple marketplace	Early-stage digital transition
Bu Encum Fish Floss	Traditional + digital	In-person sales, online promotion	Shopee, WhatsApp, social media	Active digital marketing integration
Ulva-Q Seaweed	Primarily digital	Online promotion, discount/bundle offers	Shopee, Lazada, Instagram	Focused on online health-conscious segment

Table 5. Promotional Strategy Comparison of Fisheries SMEs in Pangandaran

3.6. Value-Added Analysis (Hayami Method)

Value added is the difference between the value of the produced output and the combined value of

raw material inputs and other intermediate inputs used in the production process (Hayami et al., 1987). Table 6 presents the detailed Hayami method value-added analysis results for all four SMEs.

No.	Variable	Padasuka	Bu Encum	Ulva-Q	Husna
I. OUTPUT, INPUT, AND PRICE					
1	Output (kg)	100	15	16	48.5
2	Input (kg)	80	100	4	100
3	Labor (HOK)	8	3	3	6
4	Conversion Factor	1.25	0.15	4.00	0.485
5	Labor Coeff. (HOK/kg)	0.10	0.03	0.75	0.06
6	Output Price (Rp/kg)	28,000	700,000	250,000	100,000

7	Labor Wages (Rp/HOK)	50,000	166,667	320,000	75,000
II. REVENUE AND PROFIT					
8	Raw Mat. Price (Rp/kg)	15,000	30,000	30,000	25,000
9	Other Inputs (Rp/kg)	5,000	5,000	106,125	1,795
10	Output Value (Rp/kg)	35,000	105,000	1,000,000	48,500
11	a. Value Added (Rp/kg)	15,000	70,000	863,875	21,705
	b. VA Ratio (%)	42.86%	66.67%	89.39%	44.75%
12	a. Labor Income (Rp/kg)	5,000	5,000	240,000	4,500
	b. Labor Share (%)	33.33%	7.14%	27.78%	20.73%
13	a. Profit (Rp/kg)	10,000	65,000	623,875	17,205
	b. Profit Margin (%)	66.67%	92.86%	72.22%	79.27%
III. RETURN TO PRODUCTION FACTORS					
14	Margin (Rp/kg)	20,000	75,000	970,000	23,500
	a. Labor Income (%)	25.00%	6.67%	24.74%	19.15%
	b. Other Input (%)	25.00%	6.67%	10.94%	7.64%
	c. Entrep. Profit (%)	50.00%	86.67%	64.32%	73.21%

Table 6. Hayami Method Value-Added Analysis Results for Four SMEs in Pangandaran

Based on Table 6, all four SMEs generate positive value added, confirming that fisheries product processing is economically beneficial. The amount of value added is influenced by raw material costs, auxiliary materials, the processing method, and the selling price in the market. Additionally, the processing process helps improve product quality and extend shelf life, making products more appealing to consumers (Supriadi et al., 2021).

The highest value-added ratio is achieved by Ulva-Q Seaweed at 89.39%, reflecting superior raw material transformation through product innovation and health-oriented market positioning (Hidayati et al., 2019). Ulva-Q Seaweed records the highest absolute profit at Rp

623,875/kg, supported by product innovation, premium selling prices, health-oriented market positioning, and strong value-added transformation of seaweed products (Hidayati et al., 2019). The exceptionally high value-added performance of Ulva-Q is influenced by the high conversion factor and premium market price of processed seaweed products compared to conventional fisheries products. Meanwhile, Bu Encum Fish Floss achieves the highest entrepreneur's profit margin at 86.67%, supported by premium pricing, digital marketing, and product uniqueness from jambal roti fish (Rahmawati et al., 2021). Padasuka Crackers exhibits the highest labor share at 33.33%, reflecting the labor-intensive nature of semi-traditional cracker production, consistent with findings by Nugroho et al. (2018) that small-scale

agroindustries tend to have high labor dependency.

Performance Indicator	Leading SME	Value	Key Driver
Highest Value-Added Ratio	Ulva-Q Seaweed	89.39%	Product innovation, health market positioning, and very low raw material cost (Rp 30,000/kg)
Highest Absolute Profit	Ulva-Q Seaweed	Rp 623,875/kg	Product innovation, premium selling price, health-oriented market positioning, and the ability to transform seaweed into high-value products.
Highest Labor Share	Padasuka Crackers	33.33%	Semi-traditional and labor-intensive production process with a significant role in local job creation.
Highest Entrepreneur's Profit Margin	Bu Encum Fish Floss	86.67%	Premium selling price, digital marketing via Shopee, product uniqueness from jambal roti fish, and extended shelf life that supports wider distribution.

Table 7. Summary of Value-Added Performance Indicators Across Four SMEs

3.7. Major Challenges in Production and Marketing

Each SME faces different challenges in production and marketing activities. Based on field interviews

and documentation review, the main challenges were identified across six dimensions: raw materials, capital and financing, production and technology, marketing and promotion, human resources and management, and regulations and certification.

Challenge Aspect	Padasuka Crackers	Bu Encum Fish Floss	Ulva-Q Seaweed	Husna Salted Fish
Raw Materials	Seasonal layur fish supply; prices fluctuate with fishing season	Limited cold storage; cannot store large quantities of jambal roti fish	Ulva sp. availability depends on season and water conditions; unstable supply	Jambal roti fish supply fluctuates seasonally; limited salted fish storage
Capital & Financing	Limited capital for production expansion and equipment modernization	Capital limited for cold storage investment and capacity expansion	Limited capital for packaging development and market expansion	Limited capital for production facility development and product diversification

Production & Technology	Semi-traditional production; limited capacity when demand surges	Limited production capacity due to raw material storage constraints	Seaweed processing still on SME scale; limited specialized equipment	Salting process still traditional; no significant technological upgrading
Marketing & Promotion	Relies on offline network; has not optimized digital channels	Shopee reach not optimized; lacks structured content marketing strategy	Limited to tourist areas; no structured digital marketing strategy yet	Market reach limited locally; not yet leveraging e-commerce or social media
HR & Management	Business managed generation-to-generation; limited managerial/accounting skills	Experience-based management; no standardized quality management system	Requires HR with technical seaweed processing and digital marketing skills	Limited trained workforce; business management remains informal and family-based
Regulations & Certification	Halal certification and BPOM licensing processes still underway	Product certifications (halal, BPOM) need strengthening for wider market access	Requires health product certification for health-conscious market positioning	No adequate product certification yet; barrier to modern retail and export markets

Table 8. Major Challenges in Production and Marketing for Four Fisheries SMEs

Based on Table 8, the four SMEs face multidimensional and interrelated challenges. Limited raw material storage facilities are the most significant and widespread constraint. Nugroho et al. (2018) suggest government-facilitated communal cold storage as the most effective solution. Limited capital poses a structural barrier for all SMEs; Padasuka Crackers' collaboration with Bank BJB Pangandaran Branch serves as a positive example of financial institution synergy that should be replicated for other SMEs (Winborg & Landstrom, 2001). The underutilization of digital platforms remains a common challenge, with digital marketing training

and e-commerce mentoring being urgent needs (Rahmawati et al., 2021). Incomplete product certifications (halal, BPOM) restrict access to modern retail and export markets. Carayannis & Campbell (2009) advocate quadruple-helix synergy among academia, business, government, and the community to build a strong and competitive fisheries SME ecosystem, consistent with the mandate of Indonesian Law No. 20 of 2008 on SME development.

4. CONCLUSION AND RECOMMENDATIONS

The marketing characteristics of processed fishery SMEs in Pangandaran indicate that most business operators have implemented market segmentation encompassing geographical,

demographic, psychographic, and consumer behavioral aspects. Competition varies from low (near-monopoly for specialty products) to moderate (salted fish with substitute product competition). Pricing generally uses a cost-based approach. Promotional strategies are still dominated by traditional methods with digital media not yet optimized.

Value-added analysis using the Hayami method demonstrates that all four SMEs generate positive and substantial value added. Ulva-Q achieves the highest value-added ratio (89.39%), demonstrating the superior economic transformation potential of seaweed processing. Ulva-Q Seaweed records the highest absolute profit (Rp 623,875/kg), reflecting the strong economic potential of innovative seaweed processing. Meanwhile, Bu Encum Fish Floss achieves the highest entrepreneur's profit margin (86.67%), supported by premium pricing and digital market reach. Padasuka Crackers demonstrates the highest labor absorption (33.33%), highlighting its important role in local employment creation. Fisheries processing activities also provide economic benefits to the community by creating job opportunities and increasing business owners' income (Supriadi et al., 2021; Yapanto, 2025).

Based on these findings, fisheries processing SMEs in Pangandaran are advised to: increase digital marketing utilization (social media and online marketplaces) to expand market reach; innovate products and develop more attractive and hygienic packaging to increase value and attract modern market consumers; adopt value-based pricing strategies to maximize profit potential from the uniqueness of local products; and pursue product certifications (halal and BPOM) to access modern retail and export markets. Government and relevant agencies should provide training, mentoring, and access to capital (KUR) to enhance production capacity and business quality. Modern production technologies, particularly in drying and processing, should be adopted to reduce weather dependence and improve efficiency and sustainability.

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