

VALUE-ADDED ANALYSIS OF JAMBAL ROTI SALTED FISH (CASE STUDY ON THE FISH PROCESSING AND MARKETING GROUP IN PANGANDARAN VILLAGE, PANGANDARAN SUBDISTRICT, PANGANDARAN REGENCY, WEST JAVA)

Analisis Nilai Tambah Ikan Asin Jambal Roti (Studi Kasus pada Kelompok Pengolah Pemasar Ikan di Desa Pangandaran, Kecamatan Pangandaran, Kabupaten Pangandaran, Jawa Barat)

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(Received March 27th 2026; Accepted May 5th 2026)

ABSTRACT

Pangandaran has significant capture fisheries potential; however, fresh fish is highly perishable, requiring processing to increase its value. One prominent processed product is salted jambal roti fish, which plays an important role in the coastal economy. This study aims to analyze value added, technical production performance, and economic feasibility of processing businesses in Fish Processing and Marketing Groups (Poklahsar) in Pangandaran Village. The methods used include Hayami value-added analysis, cost-benefit analysis, and technical evaluation based on GMP, SSOP, and HACCP standards. The results show that the value added generated is Rp7,937.5/kg with a ratio of 19.8%, categorized as moderate. Economically, the business is feasible, with a profit of Rp1,235,069 per production cycle, profitability of 15.44%, and a Benefit-Cost Ratio of 1.18. The payback period is 0.23 years, with a break-even point of 12.95 kg and a unit production cost of Rp67,649/kg. However, technical performance remains low, with only 47% compliance with GMP, SSOP, and HACCP standards. In conclusion, the salted fish processing business is economically viable but requires improvements in technical practices and food safety systems to ensure sustainability.

Keywords: Cost-Benefit Analysis, GMP, HACCP, Hayami Method, SSOP

ABSTRAK

Pangandaran memiliki potensi perikanan tangkap yang tinggi, namun ikan segar mudah mengalami kerusakan sehingga memerlukan pengolahan untuk meningkatkan nilai tambah. Salah satu produk olahan yang berkembang adalah ikan asin jambal roti yang menjadi sumber ekonomi masyarakat pesisir. Penelitian ini bertujuan untuk menganalisis nilai tambah,

performa teknis produksi, serta kelayakan ekonomi usaha pada Kelompok Pengolah dan Pemasar (Poklahsar) di Desa Pangandaran. Metode yang digunakan meliputi analisis nilai tambah metode Hayami, analisis kelayakan usaha (cost-benefit analysis), serta evaluasi teknis berdasarkan standar GMP, SSOP, dan HACCP. Hasil penelitian menunjukkan bahwa nilai tambah yang dihasilkan sebesar Rp7.937,5/kg dengan rasio 19,8% yang tergolong kategori sedang. Secara ekonomi, usaha dinyatakan layak dengan keuntungan Rp1.235.069 per siklus produksi, profitabilitas 15,44%, dan nilai Benefit-Cost Ratio sebesar 1,18. Payback period tercapai dalam 0,23 tahun, dengan BEP sebesar 12,95 kg dan HPP Rp67.649/kg. Namun, performa teknis produksi masih rendah dengan tingkat kesesuaian penerapan GMP, SSOP, dan HACCP sebesar 47%. Kesimpulannya, usaha pengolahan ikan asin jambal roti layak secara ekonomi, tetapi memerlukan peningkatan dalam aspek teknis dan keamanan pangan untuk mendukung keberlanjutan usaha.

Kata Kunci: Cost-Benefit Analysis, GMP, HACCP, Metode Hayami, SSOP

INTRODUCTION

Pangandaran Regency is a coastal area in West Java with significant marine fisheries resource potential and plays a significant role in capture fisheries production. In 2023, Pangandaran Regency was among the top ten marine capture fisheries producers in West Java Province, with a total production of 2,891.95 tons (KKP 2025a). The coastal region's geographic location supports fishing activities while encouraging the development of processed products as leading commodities and regional souvenirs (Singkawijaya and Hilman 2021). One prominent product is salted jambal roti fish, known for its distinctive texture and flavor, which is sought after by both locals and tourists (Kamsiah and Ponirah 2021).

Fish processing through salting, fermentation, and drying is crucial for extending shelf life, maintaining quality, and increasing its economic value. In West Java, salting and drying are the dominant methods of fish processing, accounting for 52.11% of the total, followed by smoking at 18.53%, surimi-based processing at 16.39%, and other methods at 12.98% (KKP 2025b). In Pangandaran, salted fish production continues to increase, with manyung fish (a type of catfish) reaching 613,546 kg and kedukang (a type of catfish) at 535,596 kg in 2024 (DKPKP 2024b). Production of salted jambal roti (a type of fish) in Pangandaran Village reached 351,456 kg in the same year, making it the largest contributor compared to other villages (DKPKP 2024c). The transformation of fresh fish into processed products provides added value that plays a role in increasing income, creating jobs, and driving regional economic growth (Hayami *et al.*, 1987; Astuti and Muzayyin 2022). In Pangandaran, this activity is largely carried out by the Fishery Product Processing and Marketing Groups (Poklahsar), which are a forum for community empowerment in the processing and marketing of fishery products (Kusumawardhani *et al.* 2022). There are 28 Poklahsar groups in Pangandaran Regency, with the largest concentration in Pangandaran District, particularly Pangandaran Village (DKPKP 2024d).

Various studies have shown that salted fish processing can generate significant added value, with value-added ratios ranging from 24.08% to 89.48% depending on the product type and region (Sa'adah 2021; Supriadi *et al.*, 2021; Akmar *et al.*, 2024). Specifically, research on salted jambal roti fish in Pangandaran shows a value-added ratio of by 43% (Junianto *et al.*, 2024). However, research specifically examining the added value of salted jambal roti fish based on the Poklahsar in Pangandaran Village is still limited. Furthermore, aspects of production performance and the implementation of food safety systems such as Good Manufacturing Practices (GMP), Sanitation Standard Operating Procedures (SSOP), and Hazard Analysis Critical Control Point (HACCP) remain challenges for small businesses.

Therefore, this study aims to analyze the technical performance of production and the implementation of food safety systems (GMP, SSOP, and HACCP), evaluate the economic performance of Poklahsar-based businesses, and analyze the added value generated from the processing of salted jambal roti fish in Pangandaran Village.

RESEARCH METHODS

Place and Time

This research was conducted in Pangandaran Village, Pangandaran District, West Java, focusing on the Fishery Product Processing and Marketing Group (Poklahsar) that processes salted jambal roti fish. Primary data collection took place in May–June 2025.

Data Types and Sources

The data used in this study consisted of primary and secondary data. Primary data were obtained through interviews, observations, and structured questionnaires covering respondent identity, technical and economic aspects of the business, value-added analysis, and the implementation of food safety systems (GMP, SSOP, and HACCP). Secondary data were obtained from the Pangandaran Regency Maritime Affairs and Fisheries Service (DKPKP) and various relevant literature sources.

Research Methods and Sampling

This research uses a case study approach to gain a deeper understanding of processing activities in a real context (Patton 2002; Yin 2013 in Wahyuningsih 2013). The sampling technique used a purposive sampling method based on certain criteria, namely active Poklahsar members, running a salted jambal roti fish processing business, producing during the research period, and being willing to be respondents (Sugiyono 2013). Based on these criteria, the sample selected was Poklahsar Istri Binangkit.

Data Analysis

Data analysis uses a quantitative descriptive approach to describe the technical, economic, and value-added conditions of the business without generalizing (Sugiyono 2013; Alfatih 2021).

Technical Performance and Food Safety Analysis

The technical performance of production and the implementation of the food safety system were analyzed using a GMP, SSOP, and HACCP checklist, which refers to the regulations of the Ministry of Maritime Affairs and Fisheries. The assessment was conducted on 59 parameters and expressed as a percentage of compliance. HACCP is used to identify and control potential hazards in the production process.

Cost-Benefit Analysis

1. Business feasibility is analyzed using the Cost-Benefit method
Profit (π):
 $\pi = TR - TC$
2. Profitability:
Profitability = $(\pi / TR) \times 100\%$
3. Benefit-Cost Ratio (BCR):
 $BCR = TR / TC$
Criteria: $BCR \geq 1$ (worthy), $BCR < 1$ (not feasible)
4. Payback Period (PP):
 $PP = I / \pi$
5. Break Even Point (BEP):
 $BEP (Q) = TFC / (P - AVC)$
 $BEP (Rp) = TFC / (1 - AVC/P)$
6. Cost of goods sold (HPP):

$$\text{HPP} = \text{TC} / \text{Q}$$

Value Added Analysis

Value-added analysis was conducted using the Hayami method (Hayami et al. 1987 in Sudiyono 2004). The variables used included output, raw material input, labor, output price, labor wages, and contributions from other inputs. Value-added was calculated as the difference between the output value and the cost of raw materials and other inputs. The resulting indicators included value-added (Rp/kg), value-added ratio (%), labor income, and business profit.

Kriteria nilai tambah menurut Hubeis (1997) adalah:

1. < 15% : low
2. 15–40%: medium
3. 40% : high

In addition, added value is stated as positive if it is more than zero, which indicates that the processing business provides an increase in economic value.

RESULT

Overview of Research Location

Pangandaran Village is a coastal area directly bordering the Indian Ocean on three sides, with an area of 6.68 km² and an elevation of approximately 5 meters above sea level. The Istri Binangkit Community Group (Poklahsar Istri Binangkit) is strategically located near the east coast and the source of raw materials (PPI Cikidang), thus supporting smooth production and marketing. In one production run, 200 kg of fresh kedukang fish and 75 kg of salt are used to produce 100 kg of salted jambal roti fish. Production is carried out on average four times per month with online and offline marketing systems.

Technical Performance of Production

The production process of salted jambal roti fish at Poklahsar Istri Binangkit includes several main stages, namely weeding, salting, fermentation, and drying as follows.

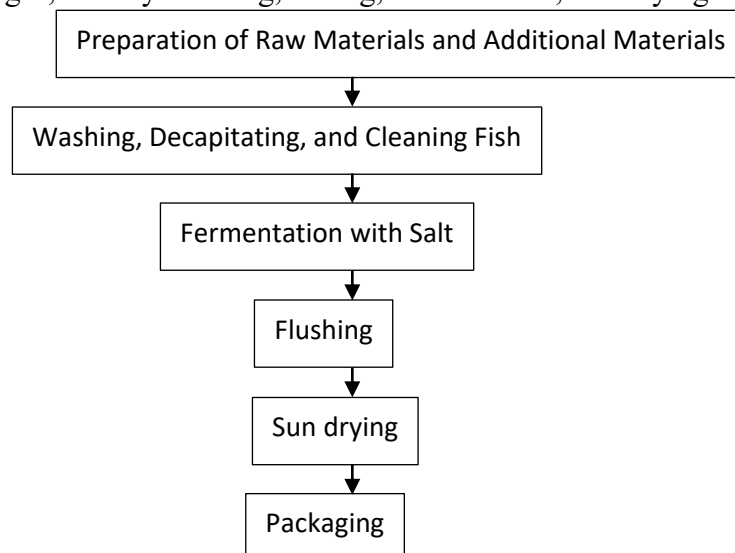


Figure 1. Jambal Roti Salted Fish Production Process

The results of the technical performance evaluation showed that the level of compliance with the implementation of GMP, SSOP, and HACCP was 47% and non-compliance was 53%.

Table 1. Technical Production Performance Analysis

No	Parameter Aspects	Number of Items	Amount		Persentase	
			In accordance	it is not in accordance with	In accordance	it is not in accordance with
1	Location and Building	19	9	10	47%	53%
2	Water and Ice Safety	5	5	0	100%	0%
3	Condition and Cleanliness of Surfaces in Contact with Food Ingredients	2	1	1	50%	50%
4	Cross-Contamination Prevention	3	0	3	0%	100%
5	Maintain Handwashing, Sanitation, and Toilet Facilities	2	2	0	100%	0%
6	Protection from Contaminants	4	4	0	100%	0%
7	Labeling, Storage, and Use of Hazardous Chemicals	2	2	0	100%	0%
8	Supervision of Health and Hygiene Conditions of Processors	6	5	1	83%	17%
9	Pest Control	3	0	3	0%	100%
10	HACCP	13	0	13	0%	100%
TOTAL		59	28	31	47%	53%

Source: Data Processing (2025)

Business Feasibility

Table 2. Total Cost Calculation

No	Cost Components	One Time Production	One month	One year
1	Fixed Costs (Rp)	183.681	734.722	8.816.667
2	Variable Costs (Rp)	6.581.250	26.325.000	315.900.000
	Total Cost (Rp)	6.764.931	27.059.722	324.716.667

Source: Data Processing (2025)

Table 3. Calculation of Total Revenue

Revenue	One Time Production	One month	One year
Production Quantity (kg)	100	400	4800
Product Price (Rp/kg)	80.000	80.000	80.000
Total Revenue (Rp)	8.000.000	32.000.000	384.000.000

Source: Data Processing (2025)

Table 4. Calculation of Profit and Profitability

Component	One Time Production	One month	One year
Total Revenue (Rp)	8.000.000	32.000.000	384.000.000
Total Cost (Rp)	6.764.931	27.059.722	324.716.667
Profit (Rp)	1.235.069	4.940.278	59.283.333
Profitability (%)	15,44	15,44	15,44

Source: Data Processing (2025)

Table 5. Calculation of Benefit-Cost Ratio

Component	One Time Production	One month	One year
Total Revenue (Rp)	8.000.000	32.000.000	384.000.000
Total Cost (Rp)	6.764.931	27.059.722	324.716.667
Benefit-Cost Ratio	1,18	1,18	1,18

Source: Data Processing (2025)

Table 6. Payback Period Calculation

Component	One year
Investment Costs (Rp)	13.405.000
Profit (Rp)	59.283.333
Payback Period (year)	0,23

Source: Data Processing (2025)

Table 7. Break Even Point (BEP) Calculation

No	Cost Components	One Time Production	One month	One year
1	Fixed Costs (Rp)	183.681	734.722	8.816.667
2	Output Price (Rp/kg)	80.000	80.000	80.000
3	Average Variable Cost (Rp/kg)	65.812,5	65.812,5	65.812,5
BEP (Rp)		1.035.732	4.142.927	49.715.125
BEP (Q) (kg)		12,95	51,79	621,44

Source: Data Processing (2025)

Table 8. Calculation of Cost of Goods Sold (COGS) per Unit

Component	Cost of goods sold
Total Cost (Rp)	6.764.931
Production Output (Q)	100
Cost of goods sold (Rp/kg)	67.649

Source: Data Processing (2025)

Value Added Analysis

Table 8. Calculation of Added Value

	Variabel	Value
I.	Output, Input, and Price	
1	Output of salted jambal roti fish (kg)	100
2	Input raw materials for salted jambal roti fish (kg)	200
3	Labor (HOK)	2,125
4	Conversion factor	0,5
5	Labor coefficient (HOK/kg)	0,011
6	Output price (Rp)	80.000
7	Labor wages (Rp/Production)	300.000
II.	Revenue and Profit	
8	Price of raw materials for salted jambal roti fish (Rp/kg)	30.000
9	Other input contributions (Rp/kg)	2.062,5
10	Output value (Rp/kg)	40.000
11	a. Value-added (Rp/kg)	7.937,5
	b. Value added ratio (%)	19,9
12	a. Labor income (Rp/kg)	3.187,5
	b. Labor share (%)	40,2
13	a. Profit (Rp/kg)	4.750
	b. Profit level (%)	59,8
III.	Remuneration for Owners of Production Factors	
14	Margin (Rp/kg)	10.000
	a. Labor income (%)	31,9
	b. Other input contributions (%)	20,6
	c. Benefits of poklahsar (%)	47,5

Source: Data Processing (2025)

DISCUSSION

The research results show that the salted jambal roti fish processing business provides added value and positive economic profits, but still faces technical production challenges. The added value of IDR 7,937.5/kg, with a ratio of 19.8%, is categorized as moderate based on Hubeis, (1997) criteria. This indicates that the processing process has been able to increase the economic value of fresh fish, although not optimally. Added value is influenced by technical factors such as production capacity, raw material use, and labor, as well as market factors such as output prices and input costs (Hayami *et al.* 1987). Compared with previous research, the added value obtained is lower than that of Junianto *et al.*, (2024) study, which achieved a ratio of up to 43%. This difference is due to variations in raw material prices, production efficiency, and business scale. This suggests that improving efficiency and marketing strategies still have the potential to increase product added value.

From an economic perspective, this business is considered feasible with a BCR of 1.18, indicating that every IDR 1 of costs generates IDR 1.18 of revenue. The profitability value of 15.44% indicates that the business is capable of generating stable profits. Furthermore, the relatively short payback period (0.23 years) indicates that the business has a rapid return on investment. The main factors influencing this economic performance are raw material prices, production efficiency, and market demand (Johansson *et al.*, 2020). However, the results of the technical performance analysis indicate that the level of compliance with GMP, SSOP, and HACCP is still low (47%). The main problems are the non-implementation of the HACCP system, the absence of pest control, and the suboptimal prevention of cross-contamination. This situation indicates that the food safety system has not been systematically implemented.

According to the FAO and WHO (2020), the implementation of food safety systems such as GMP, SSOP, and HACCP is crucial for ensuring product quality and safety, as well as increasing market competitiveness. This low level of implementation is generally due to limited infrastructure, human resources, and knowledge in small-scale businesses (Hasnan *et al.*, 2022). Overall, the results of this study indicate that the salted jambal roti fish processing business is economically viable, but requires improvements in technical aspects of production and food safety. Efforts that can be made include improving production facilities, increasing human resource capacity through training, and gradually implementing the HACCP system to improve product quality and business sustainability.

CONCLUSION

The processing of salted jambal roti fish at the Istri Binangkit Community Farming Group (Poklahsar Istri Binangkit) has been proven to generate added value of IDR 7,937.5 per kg, with a ratio of 19.8%, which is considered moderate. This indicates that the processing process significantly increases the economic value of fresh fish as raw material. From a business feasibility perspective, this activity was declared feasible and profitable, with a Benefit-Cost Ratio (BCR) of 1.18, profitability of 15.44%, and a relatively short payback period of 0.23 years. This confirms that the business has good cost efficiency and sustainability potential for small-scale development.

However, technical production performance indicates that the level of food safety system implementation (GMP, SSOP, and HACCP) is still low at 47%, indicating suboptimal product quality and safety control. This condition is a limiting factor in improving product quality and gaining broader market access.

Overall, the results of this study confirm that the economic success of the business has not been fully matched by technical production readiness. Therefore, increasing human resource capacity, improving production facilities, and gradually implementing a food safety

system are strategic steps to increase added value, competitiveness, and sustainability of the salted jambal roti fish processing business.

ACKNOWLEDGEMENT

The author would like to thank the Poklahsar Istri Binangkit in Pangandaran Village for providing permission and support during the research. He also thanks the supervising lecturer and all parties who assisted in the data collection, analysis, and preparation of this research until its completion.

REFERENCES

- Astuti, L. C., & Muzayyin, M. (2022). Analisis Nilai Tambah Kerajinan Caping di Desa Dukuhlor Kecamatan Sindangagung Kabupaten Kuningan. *Jurnal Pendidikan dan Konseling*, 4(6), 10457–10467.
- Alfatih, A. (2021). *Panduan Praktis Penelitian Deskriptif Kuantitatif*. Palembang: Unsri Press.
- Akmar, N. H., Fakhriyyah, S., Cangara, A. S., Made, S., & Amiluddin, A. (2024). Analisis Nilai Tambah Ikan Asin di Desa Aeng Batu-Batu Kecamatan Galesong Utara Kabupaten Takalar. *JIP: Jurnal Ilmiah Ilmu Pendidikan*, 7(6), 5178–5185.
- DKPKP. (2024b). Data Jumlah Ikan yang Diproduksi oleh Poklahsar Kecamatan Pangandaran (kg).
- DKPKP. (2024c). Data Produksi Ikan Asin Jambal Roti di Pangandaran.
- DKPKP. (2024d). Daftar Kelompok Pengolah dan Pemasar Hasil Perikanan Kabupaten Pangandaran.
- FAO & WHO. (2020). *Code of Practice for Fish and Fishery Products*. Rome.
- Hasnan, N. Z. N., Basha, R. K., Amin, N. A. M., Ramli, S. H. M., Tang, J. Y. H., & Aziz, N. A. (2022). Analysis of Nonconformance Aspects Related to GMP Among SMEs. *Food Control*, 141.
- Hayami, Y., Kawagoe, T., Morooka, Y., & Siregar, M. (1987). *Agricultural Marketing and Processing in Upland Java*. Pusat CGPRT.
- Hubeis, M. (1997). Menuju Industri Kecil Profesional di Era Globalisasi. *Intstitut Pertanian Bogor*.
- Johansson, A., Gustavsson, L., & Pejryd, L. (2020). Sustainable Operations Management Through Development of Unit Cost Performance Measurement. *Procedia Manufacturing*, 43, 344–351.
- Junianto, J., Veronica, V., Musthopa, A. A., & Zain, A. N. (2024). Feasibility Analysis, Planning, and Marketing of Msmes Jambal Roti Asli “H. Udin Wijaya” in Pangandaran Regency, West Java. *World Scientific News*, 193(2), 190-200.
- Kamsiah, K., & Ponirah, P. (2021). Kajian Kelayakan Usaha Pengolahan Tradisional Jambal Roti. *Jurnal Penyuluhan Perikanan dan Kelautan*, 15(3), 319–331.
- KKP. (2025a). Produksi Perikanan Tangkap Jawa Barat 2023.
- KKP. (2025b). Statistik Produk Olahan Perikanan Jawa Barat.
- Kusumawardhani, L. B., Widowati, I., & Suprihanti, A. (2022). Analisis Strategi Pemasaran Abon Lele Berbasis Siklus Hidup Produk. *Jurnal Dinamika Sosial Ekonomi*, 23(1), 42–56.
- Sa’adah, W. (2021). Analisis Nilai Tambah Pengolahan Ikan Mujair Menjadi Ikan Asin. *Mimbar Agribisnis*, 7(1), 466–475.
- Singkawijaya, E. B., & Hilman, I. (2021). Aktivitas Ekonomi Masyarakat Nelayan di PPI Cikidang Pangandaran. *Journal of Geography Education*, 2(2), 5-10.
- Sugiyono. (2013). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.

Supriadi, D., Nugraha, E. H., Widayaka, R., & Rena, R. (2021). Analisis Nilai Tambah Usaha Perikanan. *Jurnal Investasi*, 7(2), 15-21.

Wahyuningsih, S. (2013). Metode Penelitian Studi Kasus: Konsep, Teori Pendekatan Psikologi Komunikasi, dan Contoh penelitiannya. *Skripsi*. Universitas Teknologi Madura.