
MARKETING EFFICIENCY AND VALUE DISTRIBUTION OF INDIAN MACKEREL (*RASTRELLIGER KANAGURTA*) IN A SMALL-SCALE FISHERY OF CENTRAL JAVA, INDONESIA

¹Wahyu Eko Adjie Saputra, ^{2*}Hendrik Anggi Setyawan, ³Sandra Mandika
Wahyuningsih

¹Capture Fisheries Department, Faculty of Fisheries and Marine Science, Universitas
Diponegoro, Semarang, Central Java, Indonesia.

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***Corresponding Author: Hendrik Anggi Setyawan**

Capture Fisheries Department, Faculty of Fisheries and Marine Science, Universitas Diponegoro, Semarang, Central
Java, Indonesia.

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ABSTRACT

Mackerel (*Rastrelliger kanagurta*) is one of the capture fisheries commodities with high economic value and is widely marketed at TPI Tambak Lorok. The marketing process for Indian mackerel involves several marketing agencies that can influence the marketing margin and the price share received by fishers. This study aims to analyze the condition of capture fisheries, marketing channels, marketing margins, fisherman's share, and marketing efficiency of Indian mackerel at TPI Tambak Lorok, Semarang. The study was conducted in February 2026 using a descriptive method with a survey approach. Sampling of traders was carried out using purposive sampling. Data collection was conducted through interviews, observation, documentation, and literature study, then analyzed descriptively and quantitatively using marketing distribution analysis, marketing margin, fisherman's share, and marketing efficiency. The results showed that the production of Indian mackerel at Tambak Lorok Fish Auction Place area from 2020–2024 experienced an increase, with the 2024 production amounting to 11,276 kg and a production value of IDR 169,140,000. The marketing system for Indian mackerel consists of two marketing channels, namely marketing channel I (fishers–consumers) and marketing channel II (fishers–retailers–consumers). Marketing channel I has a marketing margin of IDR 0/kg and a fisherman's share of 100%, while marketing channel II has a marketing margin of IDR 5,000/kg and a fisherman's share

of 83.33%. The study concludes that Marketing Channel I is the most efficient because it has a shorter distribution chain, lower marketing margin, and a higher share received by fishers.

KEYWORDS: Mackerel, Marketing, Marketing Margin, Fisherman's Share, Marketing Efficiency.

1. INTRODUCTION

Semarang, the provincial capital of Central Java, has a strategic coastal area because it is located on the north coast of Java Island and directly borders the Java Sea. This geographical condition makes Semarang City develop as one of the centers of maritime economic activity, trade, and capture fisheries in Central Java. Capture fisheries activities in Semarang City are largely concentrated in the Tambak Lorok Fish Auction Place area, which serves as a landing center for traditional fishermen's catches. The capture fisheries sector plays a vital role for coastal communities because it provides employment, increases fishermen's income, and supports food needs through marine fisheries production. Semarang City has potential fishery resources that need to be managed optimally and sustainably to provide greater economic benefits for coastal communities and support the development of regional marine and fisheries areas [1]. The Tambak Lorok area plays a crucial role as a center for socio-economic activities for fishing communities in Semarang City, supporting the sustainability of the capture fisheries sector and marine product trade.

Mackerel (*Rastrelliger sp.*) is a small pelagic fish found in the waters of the Indonesian Fisheries Authority (WPPNRI) 712, which has significant economic potential. This is because it is the most widely caught fish for consumption by most of the population compared to other pelagic fish. Mackerel is a fish with relatively high nutritional content. Consequently, fish consumption is increasing because it is a high source of animal protein. Mackerel (*Rastrelliger sp.*) is a type of marine fish whose marketing is widespread and favored by most Indonesians [10]. However, mackerel is a fishery commodity that is prone to quality degradation if not handled properly after catching. Therefore, an effective and organized marketing system is needed to ensure faster fish distribution, maintain product quality, and maintain the economic value of mackerel. Mackerel is also known as a fishery commodity with a relatively high nutritional content and is classified as a fish with important economic value.

A marketing channel or distribution channel is a series of interrelated institutions and parties involved in the distribution of products or services from producers to end consumers. A

marketing system can be said to be efficient if each actor involved receives a proportional share of profits according to the functions, costs, and risks borne during the marketing process. Mackerel at the fisherman level is generally still marketed fresh without further processing. Marketing mackerel (*Rastrelliger sp.*) without a processing strategy and product diversification, the potential profit from marine products will remain low and vulnerable to market pressures [8]. Although mackerel is one of the fishery commodities widely marketed at the Tambak Lorok Fish Farm, information regarding marketing channels, marketing margins, *farmer's share*, and the level of mackerel marketing efficiency is still limited. A distribution channel is defined as a collection of organizations or institutions that are interconnected in the activity of delivering products and services to users or consumers [16].

2. MATERIALS AND METHODS

2.1. Time and Place

This study uses a descriptive method with a survey approach and quantitative analysis to examine the marketing system of mackerel (*Rastrelliger kanagurta*) at the Tambak Lorok Fish Farming Center, Semarang City. Data collection was conducted in February 2026 through interviews, observations, documentation, and literature studies. Respondents were selected using a purposive sampling technique consisting of 5 fishermen and 45 retailers involved in mackerel marketing activities. The data obtained were analyzed using marketing channel analysis, marketing margins, fisherman's share, profit and cost ratios, and marketing efficiency to evaluate the performance of the established marketing system.

2.2. Tools and Materials

2.3. Research Procedures

The research procedure began with a preliminary survey to identify the marketing conditions of mackerel at the Tambak Lorok Fish Farm in Semarang City. Respondents were then selected using a purposive sampling technique based on predetermined criteria. Primary data were collected through interviews, observation, and documentation, while secondary data were obtained from relevant agencies [3]. The collected data were then tabulated and analyzed using marketing distribution analysis, profit, marketing margin, marketing efficiency, and fisherman's share to evaluate the established mackerel marketing system.

2.4. Data Collection Techniques

The data used in this study consist of primary and secondary data. Primary data were obtained through interviews using structured questionnaires, field observations, and documentation of fishermen and retailers involved in the marketing of mackerel (*Rastrelliger*

kanagurta) at the Tambak Lorok Fish Farm, Semarang City. Data collected included selling price, purchase price, marketing costs, profits, income, and marketing distribution channels. Secondary data were obtained from the Tambak Lorok Fish Farm and various relevant literature sources, including fisheries production data, production value, number of fishing gears, and number of vessels used as supporting data for the study.

2.5. Data Analysis

2.5.1. Sampling Method

This study used purposive sampling to determine respondents. This technique involved deliberately selecting a sample based on several predetermined criteria aligned with the research needs and objectives. This approach ensured that the selected respondents were individuals directly related to the research object and considered capable of providing relevant information.

The number of samples in this study was taken based on the suitability of the respondent's characteristics with the research objectives and the adequacy of information obtained during the data collection process. Based on the results of field identification, 50 respondents were obtained consisting of 50 retail traders and 5 push net fishermen involved in the marketing activities of mackerel (*Rastrelliger kanagurta*) at the Tambak Lorok TPI.

The use of purposive sampling is considered effective because it allows researchers to obtain more specific data that aligns with the research focus compared to random sampling [13]. Small traders or retailers are marketing institutions that sell goods to end consumers for personal use [19].

2.5.2. Data Analysis Methods

a. Financial Analysis

The equipment used in this study is like that used in previous studies [15], business revenue analysis is generally used as a parameter to measure whether a business's activities are successful. Marketing profits are calculated using the following formula:

$$\Pi = TR - TC \dots \dots \dots (1)$$

Information:

Π = Profit of marketing agency

TR = Total revenue

TC = Total cost

b. Marketing Margin Analysis

The results of Bulan [5], marketing margin is the price difference obtained by each marketing agency during the product distribution process from the producer to the end consumer. A systematic calculation of marketing margin can be formulated as follows:

$$M = Hp - Hb \dots \dots \dots (2)$$

Information:

M = Marketing margin

Hp = Selling price

HB = Purchase price

c. Marketing Efficiency Analysis

According to Indriyani [9], marketing efficiency based on marketing finance can be measured by the portion received by the producer and the marketing margin expressed as a percentage (%). Marketing efficiency analysis can be calculated using the formula:

$$EP = \frac{\text{Marketing costs}}{\text{Value of marketed products}} \dots \dots \dots (3)$$

The criteria for marketing efficiency are as follows:

- If EP (Marketing Efficiency) > 1 means it is not efficient
- If EP (Marketing Efficiency) < 1 means it is efficient

d. Fisherman's Share Analysis

Laksono [12] also reported that fisherman's share is the portion received by fishermen. The larger the fisherman's share and the smaller the marketing margin, the more efficient the marketing distribution can be. The following formula can be used to calculate *the* fisherman's share.

$$FS = \left[\frac{HP}{HK} \right] \times 100\% \dots \dots \dots (4)$$

Information:

FS = Fisherman's share (percentage of the share received by fishermen) (%)

HP = price at producer level (fisherman) (IDR)

HK = price at consumer level (IDR)

Fisherman's share has the following criteria:

- If > 50% means efficient or equivalent;
- If < 50% it means it is not efficient or not worth it.

e. R/C Ratio

According to [15], the R/C ratio is the comparison between total revenue and total costs. The R/C ratio analysis can be calculated using the following formula:

$$R/C \text{ Ratio} = TR/TC \dots \dots \dots (5)$$

Information:

TR = Total Revenue (total income)

TC = Total Cost

The decision-making criteria for R/C Ratio analysis are as follows:

1. If the R/C Ratio > 1, then the business is considered feasible;
2. If the R/C Ratio < 1, then the business is not feasible and may even result in a loss;
3. If R/C = 0, then the business is at the BEP (Break Event Point) or also called no profit and no loss (break even).

3. RESULTS AND DISCUSSION

3.1. General Condition of Capture Fisheries at the Tambak Lorok Fish Farm

The Tambak Lorok Fish Auction Place (TPI) is in Tanjung Mas Village, North Semarang District, Semarang City, and is a key center of fishing activity on the north coast of Java. Most residents in this area work as fishermen, fish traders, and fish processing businesses, exploiting the potential marine resources of the Java Sea, their primary fishing ground.

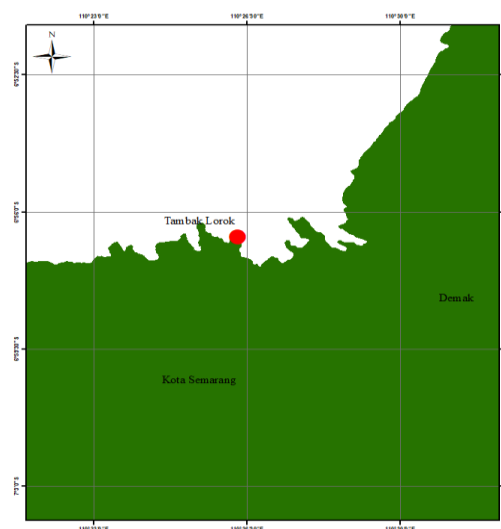


Figure 1. Research Location Map.

The Tambak Lorok area boasts a variety of public facilities and infrastructure to support the activities of coastal communities, including a prayer room (musala), a fish auction facility

(TPI), stalls and shops, government facilities, and open spaces used by the community for sports and play areas. Furthermore, the area is also supported by several other infrastructure facilities, including a road network, drainage, sanitation, clean water supply, and a waste management system. However, these facilities are still unable to fully meet the community's needs, as some of them are damaged and not functioning properly.

The types of fishing gear used by fishermen at the Tambak Lorok are quite diverse, including trawl, tarmmel net, millenium gillnet, folding trap, dragon trap and push net. However, in catching mackerel (*Rastrelliger kanagurta*), fishermen generally use push net, or local people call it sodo. Fishing operations are generally carried out with a one-day fishing system, where fishermen leave at night until morning and return at midday to land the catch at the Tambak Lorok Fish Farming Site. Fishing activities involve around 2-3 crew members in each fishing trip.

The mackerel fishing season in the Tambak Lorok is generally divided into three periods: the peak season, the normal season, and the lean season. These results are supported by Yuniar [20], the peak fishing season typically occurs from August to November, when fishermen's catches tend to increase due to favorable water conditions. Meanwhile, the lean season occurs from December to March, characterized by a decrease in catches due to unfavorable weather and sea waves. The normal season occurs from April to July, with relatively moderate catches, not as large as those during the peak season.

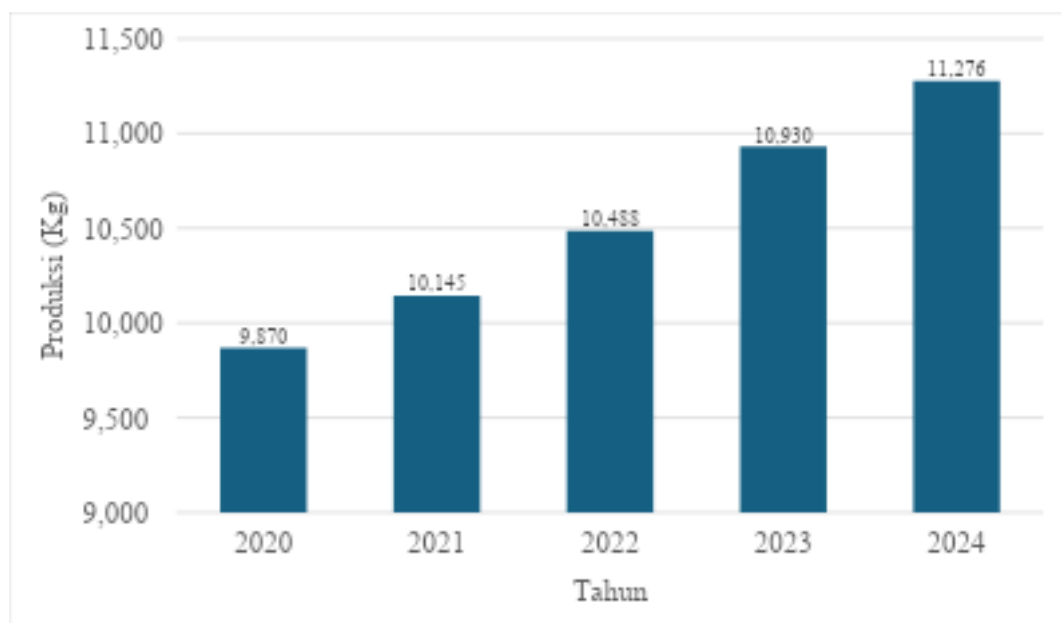


Figure 2. Production Chart of Mackerel Captured at the Tambak Lorok.

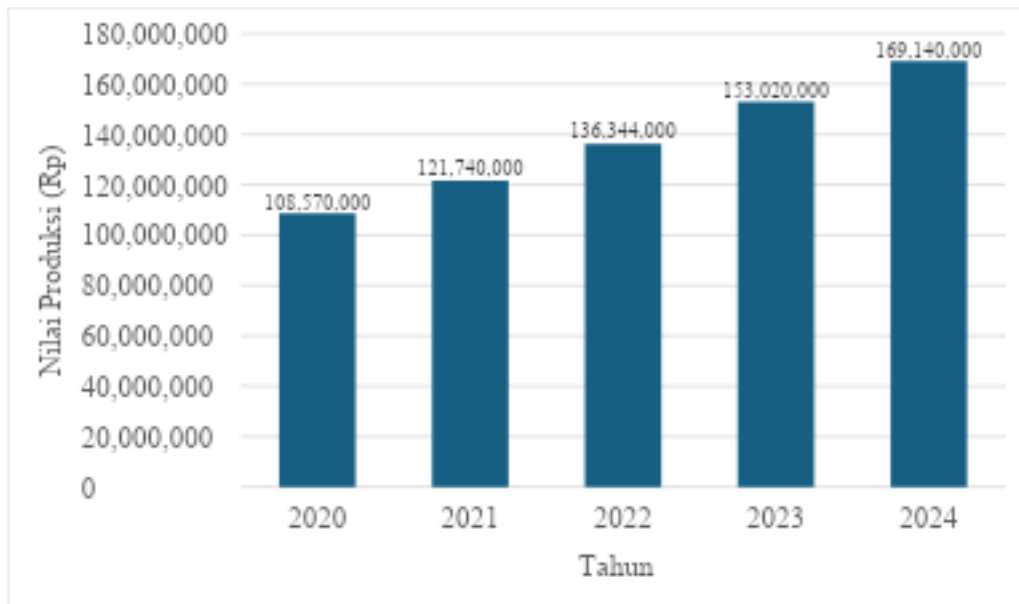


Figure 3. Graph of Production Value of Mackerel Captured.

Based on the production and production value graph, capture fisheries production at the Tambak Lorok Fish Farm increased from 2020 to 2024. The highest increase occurred in 2020, with a production volume of 6,500 kg. The production value of capture fisheries at the Tambak Lorok Fish Farm increased from 2020 to 2024, with the highest increase in production value reaching IDR 142,000,000.

3.2. Business Income Aspects

Table 1. Analysis of Push Net Capture Fisheries Business.

No	Information	Average (IDR /Trip)	Mackerel proportion 15% (IDR /Trip)
1	Gross Income	2,660,000	399,000
2	Fixed Costs	97,583	14,638
	Depreciation expense	59,083	8,863
	Ship maintenance	13,333	2,000
	Fishing gear maintenance	9,250	1,388
	Machine maintenance	11,333	1,700
	Auxiliary engine maintenance (outboard motor)	4,583	688
3	Variable Costs	629,000	94,350
	Fuel (diesel)	272,000	40,800
	Ice cubes	72,000	10,800
	Eat	60,000	9,000
	Drink	5,000	750

	Oil	100,000	15,000
	Cigarette	120,000	18,000
4	Net income	966,708	145,006
5	Profit sharing	966,708	145,006
6	Total Cost	1,693,292	253,994
7	Profit	1,933,417	290,013
8	R/C Ratio	1.57	1.57

Based on the data in Table 1, the proportion of mackerel at 15% represents the value of income and costs allocated to mackerel based on its contribution to the total catch of push net fishermen. This value is obtained by multiplying each cost component and the average revenue per trip by the proportion of mackerel at 15%, thus determining the level of income and profit derived from the mackerel commodity. The analysis of the push net capture fishery business involving all fisherman respondents shows that the average gross income earned by fishermen in one fishing trip reaches IDR 2,660,000. Of this total income, the contribution of mackerel catches has an average value of IDR 399,000 per trip obtained from the sale of fish to traders and consumers. This gross income is then reduced by fixed costs and variable costs incurred during fishing activities. This relationship pattern is consistent with the findings of Salarpouri [18], the average fixed cost incurred by fishermen is IDR 97,593 per trip, which includes the costs of boat depreciation, boat maintenance, fishing gear maintenance, engine maintenance, and maintenance of other fishing aids. In addition, fishermen also incur variable costs with an average of IDR 629,000 per trip consisting of the cost of diesel fuel, oil, crew consumption, cigarettes, and the need for ice to maintain the quality of the catch during the fishing process. The amount of variable costs tends to change according to the length of the fishing operation and the needs while at sea. After all production costs are deducted, the average net income received by push net fishermen reaches IDR 966,708 per fishing trip and is then distributed through a profit-sharing system between the business owner and the parties involved in the fishing activity. Meanwhile, the average total cost incurred by fishermen in one fishing trip is IDR 1,693,292 with an average business profit of IDR 1,933,417 per trip. In line with the study by Ganguly [7], the analysis results also show that the R/C value of the push net capture fishery business is 1.57, indicating that the fishing business using push net fishing gear is classified as profitable because the value of the revenue obtained is greater than the total costs incurred. This condition shows that the push net capture fishery business in the Tambak Lorok TPI area is still feasible and has quite good economic prospects for fishermen.

Table 2. Retail Trader Business Analysis.

No	Information	Average (IDR /Day)	Proportion of mackerel 21% (IDR /day)
1	Gross Income	650,000.00	136,500
2	Fixed Costs	8,000	1,680
	Rubbish	2,000	420
	Water	2,000	420
	Take care	2,000	420
	Trade	2,000	420
3	Variable Costs	602,000	126,420
	Motorbike (Gasoline)	2,000	420
	Capital to buy fish	588,000	123,480
	Plastic	7,000	1,470
	Ice	5,000	1,050
4	Total Cost	610,000	128,100
5	Profit	40,000	8,400
6	R/C Ratio	1.07	1.07

Based on Table 2 above, the proportion of retailers is 21%. This result is obtained from the total gross income of all fish sold divided by the total income of mackerel fish so that a total of IDR 136,500 is obtained in one day. The average gross income received by retailers with a total of all fish is IDR 650,000 with a proportion of income from Mackerel fish of IDR 136,500. The average fixed cost incurred by retailers with a total of all fish is IDR 8,000 with a proportion of expenditure from Mackerel fish of IDR 1,680. The average variable cost incurred by small traders with a total of all fish is IDR 602,000 with a proportion of expenditure from Mackerel fish of IDR 126,420. The average total cost incurred by retailers with a total of all fish is IDR 610,000 with a proportion of expenditure from Mackerel fish of IDR 128,100. The average profit received by retail traders with a total of all fish is IDR 40,000 with a proportion of income from Mackerel of IDR 8,400. The R/C ratio obtained from the total of all fish is 1.07 with a proportion of R/C ratio from Mackerel of 1.07. Therefore, it is stated that the average business carried out by retail traders is profitable and worthy of being continued.

3.2.1. Marketing Aspects of Mackerel (*Rastrelliger kanagurta*)

Marketing distribution is a series of activities carried out by a company to distribute products or services from producers to consumers through certain distribution channels. This process allows products to be available and easily obtained by consumers at the right time and place.

The mackerel marketing distribution channel at the Tambak Lorok Fish Farm is divided into two. The first mackerel marketing distribution channel includes fishermen and local consumers. In this channel, fishermen sell the fish they land at the Tambak Lorok Fish Farm directly to local consumers. These findings reinforce the results of Lilimantik [14], the second mackerel marketing distribution channel includes fishermen, retailers, and local consumers. In this channel, Push net fishermen sell their catch, namely mackerel, to retailers. Retailers distribute mackerel to local consumers.

3.2.2. Marketing Margin

Margin is the difference between the price received by the producer and the price paid by the end consumer in a product's marketing process. Marketing margin is used to determine the efficiency of the marketing system and the profit earned by each marketing agency. The size of the marketing margin is influenced by the number of marketing agencies involved in marketing mackerel at the Tambak Lorok Fish Farm.

Table 3. Marketing Margin for Mackerel at the Tambak Lorok Fish Farm.

Businessmen	Purchase Price (IDR /kg)	Selling Price (IDR /Kg)	Marketing Margin (IDR /Kg)	Total Marketing Margin	Marketing Margin Percentage	Fisherman's Share Percentage
Marketing Channel 1						
Fisherman	-	25000	0	0	0%	100%
Consumer	25,000	-	-			
Marketing Channel 2						
Fisherman	-	25,000	0	5,000	16.67%	83.33%
Retail traders	25,000	30,000	5,000			
Consumer	30,000	-	-			

Source: Research Results 2026

The marketing distribution channels for mackerel landed at the Tambak Lorok are divided into two. The first marketing distribution channel includes fishermen and local consumers. The total marketing margin for mackerel is IDR 0/Kg with a percentage of 0%. These results are supported by Kadir [11], this indicates that this channel is a direct channel (zero level), where fishermen do not bear additional marketing costs and consumers receive the final price. The second marketing distribution channel includes fishermen, retailers and local consumers. The total marketing margin for mackerel is IDR 5,000/Kg with a percentage of 16.67%. It is concluded that the marketing margin for mackerel with the largest margin value

is the second marketing distribution channel where this channel has downstream marketing to local consumers.

3.2.3. Fisherman's Share

Fisherman's share is the percentage of the price received by fishermen compared to the price paid by end consumers in a fishery product marketing channel. Fisherman's share is used to determine how much profit or price share fishermen get from the total selling price of the product at the consumer level. The value of the fisherman's share is calculated by comparing the price received by fishermen with the price at the consumer level, then multiplied by 100 percent. The greater the value of the fisherman's share, the greater the share of the price received by fishermen and the more efficient the marketing channel used. Therefore, the fisherman's share can affect the marketing efficiency of Mackerel at the Amba Lorok Fish Farming Center. According to Anam [2], the fisherman's share is the percentage of the price received by fishermen compared to the price paid by end consumers in a fishery product marketing channel.

The first marketing distribution channel for mackerel at the Tambak Lorok includes fishermen and local consumers. The fisherman's share percentage is 100%. The second marketing distribution channel for mackerel at the Tambak Lorok includes fishermen, retailers, and local consumers, with a fisherman's share percentage of 83.33%. Therefore, it can be concluded that the largest fisherman's share value for mackerel at the Tambak Lorok is found in the first marketing distribution channel. This is influenced by the lower marketing margin value compared to other channels. This study is like that used in previous studies Faizal [6], the difference in the fisherman's share value is due to the number of marketing institutions involved in the distribution of fishery products from fishermen to consumers. The fewer institutions involved, the greater the percentage value of the fisherman's share, resulting in higher fisherman's income.

3.2.4. Marketing Efficiency

A higher ratio indicates that the marketer's profits exceed their costs, thus making the marketing activity more efficient. Conversely, if marketing costs are relatively high and profits are low, marketing efficiency declines. In this study, the profit-to-cost ratio was calculated for two mackerel marketing channels in the Tambak Lorok area.

Table 4. Analysis of the Profit and Cost Ratio of Marketing Mackerel in Tambak Lorok.

Businessmen	Purchase Price (IDR /kg)	Selling Price (IDR /Kg)	Marketing Cost (IDR /Kg)	Marketing Profit (IDR /Kg)	Profit and Cost Ratio
Marketing Channel 1					
Fisherman	-	25,000	-	-	-
Consumer	25,000	-			
Marketing Channel 2					
Fisherman	-	25,000	2,940	2,060	0.70
Retail traders	25,000	30,000			
Consumer	30,000	-			

Source: Research Results 2026

Marketing efficiency is the level of a marketing system's ability to distribute products from producers to consumers at a low cost, in a timely manner, while still providing fair profits for each marketing institution. Marketing efficiency indicates how well marketing activities are carried out without incurring excessive costs. These findings reinforce the results of Said [17], marketing efficiency is a measure of the satisfaction of producers, marketing institutions involved, and consumers. The level of marketing efficiency can be measured by looking at several indicators, including marketing margins, fisherman's share, and profit and cost ratios. Analysis of Marketing Channel efficiency based on information obtained from Table 3 above shows that the lowest marketing margin is found on channel one at IDR 0 and the largest margin on channel two at IDR 5,000. The largest portion received by fishermen based on the calculation of fisherman's share is found in channel one, namely 100%. Meanwhile, the lowest fisherman's share is found on channel two, namely 83.33%. The largest profit and cost ratio is found on channel two, namely 0.70.

The mackerel marketing channel at the Tambak Lorok is considered efficient if it has a low marketing margin value because a low margin indicates that marketing costs are well managed and do not significantly burden the selling price of the fish. The mackerel marketing channel at the Tambak Lorok can also be considered efficient if the channel has a large fisherman's share value because this reflects reduced costs and intermediaries in the marketing chain also reflect increased income and welfare of fishermen. According to Ramadhani *et al.* (2021), an efficient marketing channel is characterized by a high

fisherman's share value because fishermen receive a larger share of the price compared to other marketing institutions.

Based on the results of the research conducted, it can be seen that the most efficient marketing channel for mackerel at the Tambak Lorok is the first marketing distribution channel because it has a lower margin value compared to other marketing channels, namely IDR 0 and a higher fisherman's share value of 100%. This is not in line with research. The findings of Aziza [4], in marketing channels without intermediaries (direct fishermen to consumers) there is no marketing margin (IDR 0) so that the farmer's share value reaches 100%. However, this channel is still compared with other channels because efficiency is also influenced by distribution limitations and marketing scale.

4. CONCLUSION

Based on the results of the research that has been conducted, the following conclusions are obtained, the marketing distribution channels for Mackerel at the Tambak Lorok are divided into two. The first marketing distribution channel includes local fishermen and consumers. The second marketing distribution channel includes fishermen, retailers, and local consumers. The marketing margin value of Mackerel at the Tambak Lorok in the first and second marketing distribution channels is IDR 0 and IDR 5,000 with a marketing margin percentage of 0% and 16.67%. While the percentage of fishermen's share in the first and second marketing distribution channels is 100% and 83.33%. The profit and cost ratio in the first and second marketing channels is 0 and 0.70. The level of marketing efficiency of Mackerel at the Tambak Lorok is seen based on the margin indicator, fisherman's share, and profit and cost ratio. The first marketing distribution channel is a better marketing distribution channel compared to the second marketing distribution channel because it has a lower margin value and a higher fisherman's share than the second marketing distribution channel.

REFERENCES

1. Al Fahri, A., Norrahmawati, D., Bailovan, K., Alfarez, R., Rahmawati, S., Kismartini, K., & Purnaweni, H. (2022). Reform of the Implementation of the Blue Economy Concept as an Effort to Protect the Welfare of Coastal Communities in Semarang City. *Journal of Management and Public Administration (JMIAP)*, 4(3), 168-174.
<https://doi.org/10.24036/jmiap.v4i3.525>

2. Anam, K., Fadli, M., & Nugroho, A. (2023). Analysis of Margins and Marketing Efficiency of Capture Fisheries Products. *Journal of Agricultural Economics and Agribusiness*, 7(2), 215–224.
3. Anryana, A., Yamin, A., & Fietroh, MN (2024). Implementation of E-Government Through Digital Population Identity Application at the Population and Civil Registration Service of West Sumbawa Regency. *JiIP - Scientific Journal of Educational Sciences*, 7(1), 188-193. <https://doi.org/10.54371/jiip.v7i1.3619>
4. Aziza, D. R, N, Ruthena, Y., Ardani, B., & Najamuddin, A. (2024). Channel Efficiency and Marketing Margin of Kapar Fish (*Belontia Hasselti*) in Kereng Bangkirai Village. *Journal of Tropical Fisheries*, 19(2), 1-14.
5. Bulan, M. T, & Mendario, S. (2025). Efficiency of Marketing Channels for Tuna Caught by Fishermen at the Oeba Fish Landing Base in Kupang City. *Journal of Fisheries and Agribusiness Development*, 12(1), 30-37. <https://doi.org/10.30872/jppa.v12i1.346>
6. Faizal, S. N. S. M, Zein, A., & Idris, M. H. (2021). Inequality of Profit-Sharing System in Fishing Business in Kuala Marang, Marang, Terengganu. *Journal of Sustainability Science and Management*, 16(8), 193-204. [10.46754/jssm.2021.12.013](https://doi.org/10.46754/jssm.2021.12.013)
7. Ganguly, A., Konar, U., Kundu, A., Chatterjee, S., Nandi, S., Guin, R. K., Duari, M., Mandal, A., & Das Mohapatra, P. K. (2022). Traditional Fishing Gears of Bankura District, WB, India: Some uniqueness in fish catching. *Notulae Scientia Biologicae*, 14(1), 11132. <https://doi.org/10.15835/nsb14111132>
8. Hasan, H. A., Masnawaty, S., Reni, A., & Haerani, H. (2025). Increasing the Added Value of Mackerel through the Production of Ready-to-Eat Frozen Fillets for Fishermen and Coastal MSMEs. *Journal of Community Service and Empowerment Results*, 4(2), 137-143. <https://doi.org/10.35580/jhp2m.v4i02.8365>
9. Indriyani, P., Suryana, A. A. H, Maulina, I., & Nurhayati, A. (2022). Analysis of Sales Marketing Margins and Marketing Efficiency of Gillnet Fisherman in Nusantara Fishery Port Palabuhanratu, Sukabumi. *Asian Journal of Fisheries and Aquatic Research*, 17(6), 42-53.
10. Joka, T. U, & Tega, Y. R. (2023). Handling of Mackerel (*Rastrelliger Sp.*) Using Ice and Salt with Different Concentrations. *Journal SATI*, 2(1), 240-248.
11. Kadir, R., Tuli, M., & Baruadi, A. S. R. (2025). Marketing Channels for Skipjack Tuna Caught by Pole and Line Vessels at Belang Port, Southeast Minahasa Regency. *Nikè: Scientific Journal of Fisheries and Marine Sciences*, 13(2), 73–80. <https://doi.org/10.37905/nj.v13i1.32325>

12. Laksono, A. B, Wijayanto, D., & Wibowo, B. A. (2023). Marketing analysis of swimming crab (*Portunus sp.*) in Tuban Regency. *Indonesian Journal of Capture Fisheries*, 7 (2), 63-70.
13. Lenaini, I. (2021). Purposive Sampling and Snowball Sampling Techniques. *Historis: Journal of Studies, Research, and Development of History Education*, 6(1), 33–39.
<https://doi.org/10.31764/historis.v6i1.4075>
14. Lilimantik, E. (2021). Marketing System of Striped Catfish (*Pangasius hypophthalmus*) From Freshwater Cultivation in Banjar Regency, South Kalimantan Province, Indonesia. *AACL Bioflux*, 14(5), 2947-2957.
15. Mulyawati, S., Febrilia, B. R. A, & Mandalika, E. N. D. (2023). Analysis of Income and Feasibility of Cassava Chips Agroindustry Business by KWT Nine Seru in Lantan Village. *Agrimansion Journal*, 24(1), 86-94.
<https://doi.org/10.29303/agrimansion.v24i1.1327>
16. Pramulya, R. (2022). Analysis of Capture Fisheries Marketing Channels in Samatiga District. *Jambura Agribusiness Journal* , 3(2), 69-75.
<https://doi.org/10.37046/jaj.v3i2.13414>
17. Said, S. A., Darma, R., & Tenriawaru, A. N. (2020). Marketing Efficiency in Rice Commodity Supply Chain Management in Kalukku District, West Sulawesi Province. In: *IOP Conference Series: Earth and Environmental Science* (Vol. 921, pp. 1-5).
10.1088/1755-1315/921/1/012089
18. Salarpouri, A., Daliri, M., Daryanabard, G., Taghavimotlagh, S., Momeni, M., Vahabnezhad, A., & Daghooghi, B. (2024). Socio-economic analysis: A snapshot of fishers' livelihoods for improving small-pelagic fisheries management in the northern Persian Gulf. *Iranian Journal of Fisheries Sciences*, 23(1), 197-206.
10.22092/ijfs.2024.130902
19. Syukri, M., Fitri, S. M, Faezal, F., Utami, L., Rizqina, I., & Nurlailah, N. (2024). Introduction to Accounting Recordkeeping for Small Traders in the Kuta Coast Area, Mandalika Regency. *Devote: Global Community Service Journal*, 3(1), 64-68.
<https://doi.org/10.55681/devote.v3i1.2537>
20. Yuniar, A., Zainuddin, M., Safruddin, Mustapha, M. A, Hidayat, R., & Sriktoviana, S. K (2025). Ecological Modeling of Potential Habitats for Indian Mackerel (*Rastrelliger spp.*) in the Western of Banda Sea using an Artificial Neural Network Approach. *Tropical Life Sciences Research*, 36(3), 177-196.
<https://doi.org/10.21315/tlsr2025.36.3.9>

