West Science Interdisciplinary Studies
Vol. 4, No. 01, January and 2026: pp. 1-12

Analysis of Regional-Based Fisheries Potential Development Strategies in Papua

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ABSTRACT

Large capture-fisheries and aquaculture potential in Papua Province has yet to meet the reality of regional development based on fisheries, due to infrastructure gaps, limited value-added processing, weak institutions, and continuous external risks. This study assesses the regional-based fisheries potential development strategy in Papua Province to increase coastal community welfare without compromising resource sustainability. Secondary data from the period of 2003–2024 are combined with stakeholder inputs from surveys, interviews, and focus group discussions and analyzed by using a SWOT framework supported by IFAS–EFAS weighting to identify strategic priorities. The mean IFAS score revealed that internal strengths (3.27) outweighed weaknesses (1.53), largely attributed to abundant fish resources, emerging fishing/processing technologies, government support, market potential, and local wisdom of coastal areas. Results from EFAS revealed that the mean opportunities (3.16) outweigh threats (1.81), particularly export demand, progress in technology, government programs, and digital marketing prospects, although illegal fishing, overfishing pressures, climate variability, and conflict over fishing grounds remained the key concerns. The position here is in the first quadrant, denoting an area where the fishery can grow well and indicates the need to focus more on Strength-Opportunity (SO) plans involving the optimization of export-directed manufacturing, the enhancement of fish processing facilities to increase value addition to fish, and the use of e-commerce and online marketing, as well as the use of local economic institutions to improve fish distribution, and the development of networks based on local culture to ensure superior processed fish products.

Keywords: *Papua, Fisheries-Based Regional Development, SWOT Analysis, Development Strategies, Sustainable Marine Resources*

1. INTRODUCTION

The fisheries sector plays a vital role in the economy of Papua Province. With its long coastline, vast marine waters, and abundant potential for capture fisheries and aquaculture, Papua offers significant potential for sustainable fisheries industry development. However, the sector's growth still faces various challenges, such as limited infrastructure, a lack of processing technology, and limited market access.

According to data from the Ministry of Maritime Affairs and Fisheries (KKP) in 2023, Papua's capture fisheries production reached 420,000 tons per year, while aquaculture production reached 150,000 tons per year. Leading commodities include tuna, skipjack tuna, mackerel, and aquaculture products such as whiteleg shrimp and white snapper. Capture fisheries production has increased rapidly and its contribution to regional economic growth and the welfare of the Jayapura City community is quite significant [1], [2]. However, the lack of an in-depth analysis of leading commodities that contribute significantly to the local economy and fisheries-based regional development strategies is a major obstacle to formulating appropriate policies.

The development of the fisheries sector in Papua faces challenges such as limited infrastructure, limited market access, and minimal adoption of modern technology [3], [4]. Furthermore, the identification of superior commodities has not been optimal, hampering the

competitiveness of fisheries products in the global market [5]–[8]. Therefore, this research is needed to formulate a more effective management strategy.

Developing fisheries areas in Papua requires a holistic approach based on local potential. Identification and optimization of leading commodities such as tuna and whitebait shrimp must be supported by adequate fisheries infrastructure, such as ports and cold storage [3]. Increasing the capacity of fishermen through training in modern technology and sustainable governance is crucial for maintaining ecological balance [9]–[11]. Furthermore, partnerships between the government, the private sector, and communities are needed to create inclusive business models that sustainably improve community welfare [12]. This strategy strengthens the competitiveness of Papua's fisheries sector in the global market [13]–[17]. Therefore, this research is crucial to examine using the various approaches mentioned above in order to generate recommendations for developing leading regions and commodities to improve the performance of the fisheries sector in Papua Province.

Research purposes

Evaluating fisheries-based regional development strategies to improve community welfare and resource sustainability.

Urgency of Research

Papua has significant fisheries potential, but still faces challenges in optimally utilizing it. Data-driven analysis is needed to identify more effective and sustainable strategies for developing the fisheries sector. Without this research, the management of Papua's fisheries resources risks uncontrolled exploitation or underutilization.

2. METHODS

2.1 Scope of Research Area and Implementation Time

The scope of this research area covers all coastal areas and waters in Papua Province that have superior fisheries potential, including primary fishing grounds and fish farming areas. The research will focus on identifying superior fisheries commodities that contribute significantly to the local economy and analyzing the socio-economic conditions of fishing communities in the region. Furthermore, the research will examine regional-based fisheries development strategies that consider the sustainability of resources, infrastructure, and local policies to support the optimization of fisheries potential in Papua. The research is planned to be implemented at the Papua Provincial Statistics Office, the Regional Development Planning Agency (Bappeda), and the Papua Provincial Maritime Affairs and Fisheries Office from May to July 2025.

2.2 Data Types and Sources

Types of data used Secondary data in the form of 2003-2024, namely data on capture fisheries production and cultivation per district, data on exports of superior commodities, economic data on the fisheries sector's contribution to GRDP, data on government policies and regulations related to the fisheries sector, socio-economic data on fishermen and fish farmers. Data sources were obtained from: Ministry of Maritime Affairs and Fisheries, Papua Central Statistics Agency, Papua Provincial Maritime Affairs and Fisheries Service.

2.3 Method of Collecting Data

1. **Literature Study**

   This research utilizes literature review as the primary foundation for collecting relevant secondary data. Through a review of previous research reports,

scientific journals, fisheries statistics, and annual reports related to regional development based on the fisheries sector, this study can obtain a comprehensive overview of the conditions, developments, and challenges faced in the sector. Literature review also helps develop a theoretical framework and provides a basis for further analysis based on valid and reliable data.

2. **Survey and Interview**

   Survey and interview methods were used to gather information directly from key actors in the field, namely fishermen, fisheries entrepreneurs, and relevant government officials. The surveys provided quantitative data on their conditions, needs, and perceptions regarding fisheries sector development, while in-depth interviews generated qualitative data that enriched understanding of social and economic dynamics and the obstacles faced. This approach also enabled researchers to gain authentic insights not always captured in secondary data.

3. ***Focus Group Discussion*** **(FGD)**

   The FGDs were conducted as a forum for discussion with various stakeholders in fisheries development, including government, business actors, academics, and fishing communities. The goal was to obtain input and validate the types of data to be used in the research and to ensure the availability and quality of such data. Furthermore, the FGDs served as a platform for exploring diverse perspectives, identifying key issues, and developing more applicable recommendations that met the needs of all stakeholders.

2.4 Key Informant

The research population is stakeholders who play a role in encouraging the fisheries sector to become a leading sector in the economy of Papua Province, namely: 2 people from the Papua Province Maritime Affairs and Fisheries Service, 1 person from BPS, 1 person from the Papua Province Bappeda, 1 fisheries entrepreneur, 1 academic, 1 fisheries NGO, 1 media person, 2 local banks with a total of 10 people.

2.5 Data Analysis Methods

Analysis of the evaluation of fisheries-based regional development strategies to improve community welfare and resource sustainability using the SWOT approach.

3. RESULTS AND DISCUSSION

3.1 Analysis of Fisheries-Based Regional Development Strategies to Improve Community Welfare and Sustainability of Resources

The fisheries-based regional development strategy in Papua Province is aimed at improving community welfare while maintaining the sustainability of fisheries resources. Papua has enormous fisheries potential, both in terms of capture fisheries and aquaculture, spread across various coastal districts such as Waropen, Biak Numfor, the Yapen Islands, and Jayapura. Development is carried out through several approaches, including the implementation of measured, quota-based fishing to prevent overexploitation, the development of export-oriented aquaculture based on local commodities, and the strengthening of fisheries MSMEs to increase added value and community income. In addition, conservation efforts are carried out through the expansion of conservation areas, coastal ecosystem monitoring, and campaigns to reduce plastic waste and prohibit the use of destructive fishing gear. With this strategy, fisheries resource management in Papua is expected to be sustainable, increase the income of coastal communities, and preserve marine ecosystems for future generations. The following will explain the internal factor matrix (IFAS).

Table 1. Internal Factor Matrix (IFAS) of Fisheries-Based Regional Development in Papua Province

Internal Factors	Strength	Weakness
	1. Abundant potential fish resources 2. Advances in fish catching and processing technology 3. Central and regional government support for the fisheries sector 4. Opportunities for integration with other sectors 5. A relatively large number of fishing vessels 6. Culture and local wisdom of coastal communities 7. High local market and export potential for catch 8. The existence of fish processing units (UPI) in several regions	1. Limited port infrastructure and fish processing facilities 2. Low added value of fishery products 3. Difficult access to capital for small fishermen 4. Limitations of modern fishing technology 5. Lack of skilled human resources in managing catch results 6. Suboptimal supervision of fish resources 7. Incomplete and inaccurate fisheries data and information 8. Weak local institutions such as fishermen's cooperatives and village business units
External Factors	Opportunities	Threats
	1. High market demand for fishery export products 2. Advances in fish catching and processing technology 3. Support for central and regional government programs 4. Potential for cooperation with international partners 5. Strengthening the role of fishermen's cooperatives and local economic institutions 6. Development of logistics and distribution infrastructure 7. Utilization of digitalization and e-commerce for marketing 8. Opportunities for developing processed catch products based on local wisdom as a superior regional commodity	1. Illegal fishing 2. Climate change and extreme weather affecting crop yields 3. Weak supervision and law enforcement regarding damage to aquatic ecosystems. 4. The economic dependence of coastal communities solely on the fisheries sector without business diversification makes them vulnerable. 5. Social conflict occurs due to competition for fishing grounds or access to marine resources between communities. 6. There are still destructive practices such as the use of explosives or poison in fishing. 7. Fluctuations in fish prices in the global market have an impact on the income of local fishermen. 8. **Limited access to financing for small fishermen and local fish farmers**which causes dependence on middlemen or external parties.

Source: Processed Primary Data, 2025

The fisheries sector in Papua holds significant potential as an economic driver for coastal communities. Internally, its primary strength lies in the availability of abundant, relatively unexploited fish resources. Furthermore, advances in fishing and processing technology are beginning to be introduced, although still limited to certain regions. Support from the central and regional governments is also evident in the form of assistance programs and regulations for sustainable fisheries management. Papua also offers opportunities for integrating the fisheries sector with other sectors, such as marine tourism and local wisdom-based seafood processing. The sizable fleet of fishing vessels in several regencies, such as Mimika and Merauke, contributes to this strength, alongside the culture and local wisdom of coastal communities that maintain traditional maritime traditions. The potential for local and export markets is also significant, particularly for reef fish and tuna, supported by the development of several Fish Processing Units (UPI) in areas such as Biak and Jayapura.

However, this sector is not without its weaknesses. Limited port infrastructure and a lack of processing facilities prevent the catch from being economically maximized. The added value of

fishery products is low, as most fish are sold raw without further processing. Difficult access to capital, especially for small-scale and traditional fishermen, is a major obstacle to scaling up their businesses. Modern technology remains unequally distributed, and the limited skilled workforce for catch management leads to reliance on traditional methods. Furthermore, oversight of fishery resources remains weak, leaving them vulnerable to overexploitation and illegal fishing. The lack of accurate fisheries data and the weakness of local institutions such as fishermen's cooperatives also undermine the community's bargaining position in the market.

Externally, Papua has significant opportunities to advance its fisheries sector. High demand for seafood exports, particularly from Asia and Europe, can be leveraged by improving production quality and volume. Technological advances and digitalization, including e-commerce-based marketing, can open broader market access. Collaboration with international partners can also encourage technology transfer and investment, while the development of locally processed, culture-based products can become Papua's leading commodity.

However, this sector also faces a number of serious threats. Illegal fishing in Papuan waters remains common, particularly by foreign vessels, harming local fishermen. Climate change and extreme weather conditions create uncertain fishing seasons and endanger the safety of fishermen. Weak marine environmental monitoring exacerbates ecosystem damage, while communities' economic dependence solely on the fisheries sector makes them highly vulnerable to external disturbances. Social conflicts between fishing communities over fishing grounds have also begun to emerge. Furthermore, destructive practices such as the use of bombs and poisons persist in some areas, threatening the sustainability of marine resources. Fluctuations in global market prices and limited access to financing make it difficult for small-scale fishermen to develop, often making them dependent on middlemen.

3.2 Internal Strategic Factors (IFAS) Fisheries-Based Regional Development Strategy to Improve Community Welfare and Sustainability of Resources

In an effort to promote sustainable and inclusive regional development, the fisheries sector in Papua Province plays a strategic role as one of the main pillars of the regional economy, particularly for coastal communities. Abundant fish resources, a strong maritime culture, and potential local and export markets provide the foundation for designing development strategies focused on improving community welfare while preserving marine ecosystems. Therefore, an Internal Factor Analysis Summary (IFAS) is needed, encompassing the internal strengths and weaknesses of the fisheries sector. This analysis is crucial for understanding the extent to which internal capacities and constraints can be utilized or addressed in developing effective and sustainable fisheries-based regional development strategies. Through this approach, the Papua Provincial Government is expected to develop policies that not only increase fisheries sector productivity but also strengthen local institutions, improve resource governance, and promote equitable and equitable economic value-added for coastal communities.

Table 2. Internal Strategic Factors (IFAS) of Fisheries-Based Regional Development Strategy in Papua

No	Internal strategic factors	Weight	Rating	Weight x Rating
Strength				
1	Abundant potential fish resources	0.14	4.00	0.56
2	Advances in fish catching and processing technology	0.13	4.00	0.52
3	Central and regional government support for the fisheries sector	0.12	3.00	0.36
4	Opportunities for integration with other sectors	0.11	3.00	0.33
5	A relatively large number of fishing vessels	0.13	3.00	0.39
6	Culture and local wisdom of coastal communities	0.12	3.00	0.36
7	Local market potential and export of catch results	0.13	3.00	0.39

8	The existence of fish processing units (UPI) in several regions	0.12	3.00	0.36
Total		**1.00**	**26.00**	**3.27**
Weakness				
1	Limited port infrastructure and fish processing facilities	0.15	2.00	0.30
2	Low added value of fishery products	0.13	2.00	0.26
3	Difficult access to capital for small fishermen	0.13	2.00	0.26
4	Limitations of modern fishing technology	0.12	2.00	0.24
5	High operational costs of fishing	0.10	2.00	0.10
6	Limited business capital	0.12	1.00	0.12
7	The level of education of fishermen is low	0.10	1.00	0.10
8	Weak government oversight	0.15	1.00	0.15
Amount		**1.00**	**13**	**1.53**
Total Strengths and Weaknesses		**1.00**	**39.00**	**4.80**

The results of the Internal Strategic Factor Analysis (IFAS) indicate that the fisheries sector in Papua Province possesses significant internal strengths compared to its weaknesses. With a total weighted score of 3.27 for strengths and 1.53 for weaknesses, the total IFAS score reached 4.80, indicating that the internal conditions of the fisheries sector in Papua are in a conducive position for development. The main strength that dominates is the potential for abundant fish resources (the highest score of 0.56), supported by advances in fishing and processing technology and a relatively large fleet of fishing vessels. Other factors that contribute to strengthening this sector are support from the central and regional governments, potential export markets, and the strong local wisdom of coastal communities in maintaining marine ecosystems through traditional methods.

Furthermore, various weaknesses remain that need to be addressed to maximize existing potential. Limited port infrastructure, low added value of fishery products, and difficult access to capital for small-scale fishermen represent real challenges. This reflects the conditions in various coastal areas of Papua, such as Mimika, Merauke, and Asmat, which, despite being rich in natural resources, still face gaps in infrastructure and access to financing. The relatively low level of education among fishermen and weak government oversight of fishing activities also increase the risk of overexploitation and unsustainable fishing practices.

Thus, the IFAS results provide an important basis for developing a fisheries development strategy in Papua, leveraging internal strengths as levers for economic growth while addressing structural weaknesses through appropriate policy interventions. Fisheries-based regional development strategies in Papua need to focus on increasing product added value, improving port infrastructure and distribution chains, strengthening local human resource capacity, and strengthening community-based fisheries institutions to sustainably improve the well-being of coastal communities.

Table 3. External Strategic Factors (EFAS) of Fisheries-Based Regional Development Strategy in Papua

No	External strategic factors	Weight	Rating	Weight x Rating
Opportunities				
1	High market demand for fishery export products	0.16	4.00	0.64
2	Advances in fish catching and processing technology	0.14	3.00	0.42
3	Support for central and regional government programs	0.14	3.00	0.42
4	Potential for cooperation with international partners	0.11	3.00	0.33
5	Strengthening the role of fishermen's cooperatives and local economic institutions	0.12	3.00	0.36
6	Development of logistics and distribution infrastructure	0.11	3.00	0.33
7	Utilization of digitalization and e-commerce for marketing	0.12	3.00	0.36

8	Opportunities for developing processed products based on local wisdom	0.10	3.00	0.30
Total		**1.00**	**29.80**	**3.16**
Threats				
1	Illegal fishing	0.14	1.00	0.15
2	Overfishing	0.15	2.00	0.28
3	The 3 fishing fleets continue to grow	0.13	1.00	0.13
4	There is a struggle for fishing areas	0.10	2.00	0.24
5	Increasing water pollution on the coast of Papua Province	0.11	2.00	0.22
6	Climate change causes strong waves and winds	0.13	1.00	0.13
7	Production costs are increasing	0.12	3.00	0.36
8	Conflict between fishermen and customary rights owners	0.12	3.00	0.30
Amount		**1.00**	**15.20**	**1.81**
Total Opportunities and Threats		1.00	30.40	3.12

Source: Processed Primary Data, 2024.

Based on the results of the External Strategic Factor Analysis (EFAS), the fisheries sector in Papua Province shows significant development potential through various available opportunities, although it still faces a number of external challenges that need to be anticipated. The total weighted score for the opportunity factor reached 3.16, while the total for the threat factor was 1.81, for a total EFAS of 4.97. These figures indicate that the external environment provides more positive incentives than obstacles, so this condition can be utilized strategically in formulating policy direction and fisheries development in the Papua region.

The greatest opportunity stems from high export market demand for fishery products (the highest score of 0.64), followed by technological advances, support from the central and regional governments, and the potential for international cooperation. Papua, with its extensive coastline and untapped marine resources, such as in Cenderawasih Bay, Merauke, Mimika, and the Yapen Islands, offers significant potential to transform the fisheries sector into a driving force for the regional economy. Strengthening the role of fishing cooperatives and local economic institutions also opens new access to logistics infrastructure, distribution, and digital product marketing. In fact, processed products based on local Papuan wisdom, such as smoked fish, fish floss, and processed shellfish, have the potential to become leading regional commodities.

Conditions on the ground indicate that various external threats remain looming and must be addressed seriously. The main threats include illegal fishing, overfishing, and social conflicts such as disputes over fishing grounds and conflicts between fishermen and customary landowners. Furthermore, water pollution in coastal areas of Papua Province and the impacts of climate change, such as high waves and strong winds, complicate fishing activities, particularly for small-scale fishermen. Rising production costs also narrow profit margins for fishermen, particularly those not yet affiliated with cooperatives or strong institutions.

Taking all EFAS findings into account, the strategy for developing the fisheries sector in Papua must be adaptive and responsive to external changes. The local government, along with stakeholders, needs to strengthen fishermen's resilience to threats while expanding market access, technology, and partnerships. This will strengthen Papua's position in realizing the well-being of coastal communities and ensuring the sustainability of fisheries resources for future generations.

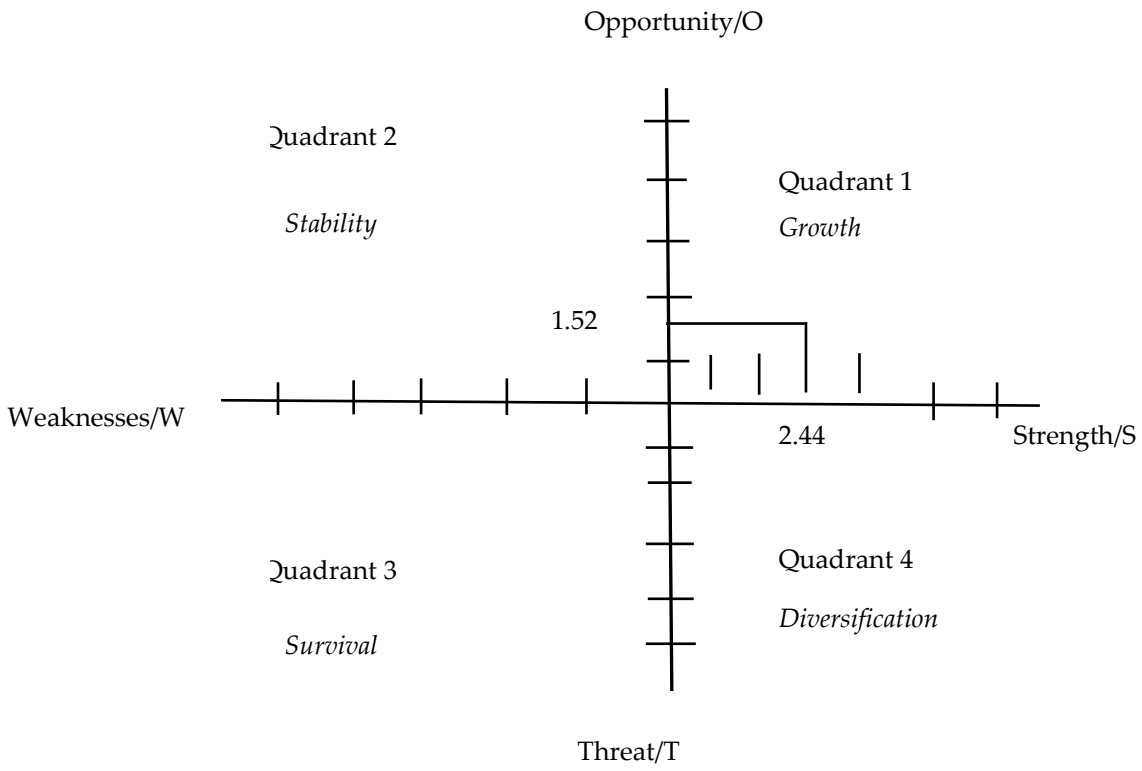

Figure 4. IFAS and EFAS Diagram of Fisheries Development in Papua Province
Source: Processed Primary Data, 2025

Based on the analysis of the organization's position using the opportunity-threat matrix, four strategic quadrants were obtained. The mapping results show the coordinate point is at an opportunity value of 2.44 and a threat value of 1.52, thus the dominant position is in Quadrant I (Growth). This indicates that the organization is in a strong condition and has significant opportunities for development. The recommended strategy is a growth strategy, namely expanding programs or businesses, increasing production capacity, and utilizing external support to drive better performance.

However, it's still important to pay attention to aspects in other quadrants. In Quadrant II (Stability), organizations must ensure sustainable performance by maintaining consistent service quality and resources. Quadrant III (Survival) highlights the need for efficiency measures in areas facing threats and internal weaknesses, while Quadrant IV (Diversification) opens up opportunities for innovation to capitalize on new opportunities while anticipating risks from a dynamic environment.

Overall, the position in the growth quadrant provides a positive signal: the organization is worthy of implementing expansion and innovation strategies while maintaining operational stability and vigilance against external threats.

IFAS / EFAS	Strength:	Weakness:
	1. Abundant potential fish resources 2. Advances in fish catching and processing technology 3. Central and regional government support for the fisheries sector 4. Opportunities for integration with other sectors 5. A relatively large number of fishing vessels 6. Culture and local wisdom of coastal communities 7. Local market potential and export of catch results 8. The existence of fish processing units (UPI) in several regions	1. Limited port infrastructure and fish processing facilities 2. Low added value of fishery products 3. Difficult access to capital for small fishermen 4. Limitations of modern fishing technology 5. Lack of skilled human resources in managing catch results 6. Suboptimal supervision of fish resources 7. Incomplete and inaccurate fisheries data and information 8. Weak local institutions such as fishermen's cooperatives and village business units
Opportunity: 1. High market demand for fishery export products 2. Advances in fish catching and processing technology 3. Support for central and regional government programs 4. Potential for cooperation with international partners 5. Strengthening the role of fishermen's cooperatives and local economic institutions 6. Development of logistics and distribution infrastructure 7. Utilization of digitalization and e-commerce for marketing 8. Opportunities for developing processed catch products based on local wisdom as a superior regional commodity	**SO Strategy:** 1. Increase fishery product exports by optimizing fish resource potential (S1) and export market potential (O1); 2. Encourage the strengthening of fish processing units (UPI) based on new technology to increase the added value of products (S8, S2 - O2, O8); 3. Increasing the integration of the fisheries sector with e-commerce and digital marketing to expand the market (S4 - O7); 4. **Developing a network of fishermen's cooperatives that is able to reach digital and export markets**based on local cultural potential (S6 - O5, O7, O8). 5. Expanding international cooperation based on culture and local wisdom for processed products with export value (S6 - O4, O8)	**WO Strategy:** 1. **Encourage the revitalization of people's fishing ports and increase the capacity of small-scale UPI** through multi-party collaboration and government program support (W1 – O3, O6); 2. Improving human resource skills through modern technology-based training programs and international cooperation (W5 - O2, O4); 3. Promote digitalization of fisheries data and information with government support and digital platforms (W7 - O7); 4. Developing local institutions such as cooperatives based on e-commerce and digital marketing (W8 - O7, O8); 5. Opening access to capital based on government programs to strengthen small fishermen and local fish farmers (W3 - O3, O6)
Threats: 1. Illegal fishing 2. Climate change and extreme weather affecting crop yields	**ST Strategy:** 1. Improve monitoring of marine resources with the support of a large fleet of fishing vessels (S5 - T1, T6);	**WT Strategy:** 1. Improving the monitoring and legal system based on increasing local institutional capacity (W6, W8 - T1, T3, T5);

3. Weak supervision and law enforcement regarding damage to aquatic ecosystems. 4. The economic dependence of coastal communities solely on the fisheries sector without business diversification makes them vulnerable. 5. Social conflict occurs due to competition for fishing grounds or access to marine resources between communities. 6. There are still destructive practices such as the use of explosives or poison in fishing. 7. Fluctuations in fish prices in the global market have an impact on the income of local fishermen. 8. **Limited access to financing for small fishermen and local fish farmers** which causes dependence on middlemen or external parties.	2. Encourage diversification of local wisdom-based businesses to reduce economic dependence on fisheries (S6 - T4); 3. Optimizing processing technology to deal with global price fluctuations by creating high value-added processed products (S2 - T7); 4. Developing local culture-based climate adaptation programs to reduce the impact of extreme weather changes (S6 - T2)	2. Increasing access to cooperative-based financing to reduce dependence on middlemen and price fluctuations (W3, W8 - T7, T8); 3. Accelerate modernization of fishing technology to reduce the impacts of climate change and low catch yields (W4 - T2) 4. Establish a fisheries data center to monitor global market trends and fishermen's food security (W7 - T7)

The results of the SWOT matrix analysis obtained SO strategies that should be implemented infisheries-based regional development strategy in Papua is:

1. Increase fishery product exports by optimizing fish resource potential (S1) and export market potential (O1);
2. Encourage the strengthening of fish processing units (UPI) based on new technology to increase the added value of products (S8, S2 - O2, O8);
3. Increasing the integration of the fisheries sector with e-commerce and digital marketing to expand the market (S4 - O7);
4. Strengthening the production and distribution capacity of catches through the active role of fishermen's cooperatives and local economic institutions (S3 – O3, O5, O6);
5. Expanding international cooperation based on culture and local wisdom for processed products with export value (S6 - O4, O8)

Table 4. Summary of SWOT Calculation Results Fisheries-Based Regional Development Strategy in Papua Province

IFAS / EFAS	**Strength (Strength) = 3.27**	**Weakness (Weakness) = 1.53**
Opportunity (Opportunity) = 3.16	SO = 6.43	WO = 4.69
Threat (Threats) = 1.81	ST = 5.08	WT = 3.34

Source: Processed Primary Data, 2025.

The analysis results show that the Strength–Opportunities (SO) strategy has the highest score of 6.43, followed by the Weakness–Opportunities (WO) strategy at 4.69, the Strength–Threats (ST) strategy at 5.08, and the Weakness–Threats (WT) strategy at 3.34. These findings illustrate that strengthening existing internal factors and utilizing available external opportunities is the most strategic approach in tuna fisheries management. Potential strengths such as the availability of abundant tuna resources, technological advances, and government policy support can be maximized to capture export market opportunities and utilize fisheries infrastructure in the coastal areas of Papua.

Optimizing these strengths and opportunities is key to increasing the added value, production volume, and competitiveness of Papuan tuna fisheries, particularly in areas such as Fakfak, Biak, and the surrounding waters, known as tuna migration areas. Meanwhile, a high WO score indicates the importance of addressing structural weaknesses such as limited infrastructure and capital, while still utilizing available external support. Relatively lower ST and WT scores indicate that threats can still be managed, especially if internal strengths are strengthened and weaknesses are minimized through increased human resource capacity, strengthening local institutions, and improving regulations.

The tuna sector development strategy in Papua can be directed at expanding the market, increasing production chain efficiency, and developing high-value processed products. The primary focus should be on strengthening fishing cooperatives, increasing access to capital and appropriate technology, and protecting fishing grounds from destructive threats and conflicts of interest. These efforts will not only improve the welfare of coastal communities but also ensure the sustainability of tuna resources as a vital asset for Papua and Indonesia as a whole. The next step will be to prioritize the SWOT strategy, as follows:

Table 4. Priority Order of SWOT Strategies for Fisheries Management in Papua Province

Priority	Strategy	Weight of value
1	*Strength - Opportunity*	5.25
2	*Weakness - Opportunity*	4.50
3	*Strength - Threats*	3.07
4	*Weakness - Threats*	3.00

Source: Processed Primary Data, 2025.

Based on the SWOT strategy priority table, Strength-Opportunity (SO) has the highest weighting, as it is a strategy that utilizes all strengths to maximize opportunities. The Strength-Opportunity (SO) strategy based on the SWOT matrix has several policy strategies as follows:

1. Increase fishery product exports by optimizing fish resource potential (S1) and export market potential (O1);
2. Encourage the strengthening of fish processing units (UPI) based on new technology to increase the added value of products (S8, S2 - O2, O8);
3. Increasing the integration of the fisheries sector with e-commerce and digital marketing to expand the market (S4 - O7);
4. Expanding international cooperation based on culture and local wisdom for processed products with export value (S6 - O4, O8).

CONCLUSION

The Strength-Opportunity (SO) strategy is a top priority in the development of the fisheries sector, focusing on optimizing potential, technology, digitalization, and international partnerships to increase exports and product competitiveness.

SUGGESTION

1. It is hoped that the Papua Provincial Maritime Affairs and Fisheries Service will strengthen data-based policies for determining superior commodities, stock conservation plans, and sustainable fishing zoning.
2. Providing integrated fisheries infrastructure (PPI, cold chain, auction place, dock) in strategic production centers.
3. It is hoped that fisheries entrepreneurs will invest in environmentally friendly technology, product processing units (UPH), and cold chain facilities to maintain quality and competitiveness.
4. Building fair partnerships with fishermen through a transparent price contract system and catch purchase.
5. It is hoped that fishermen will prioritize sustainable fishing practices (selective fishing gear, maintaining the size of the fish caught).
6. Improving post-harvest skills: handling fresh fish, use of ice, storage according to quality standards.
7. Participate in community-based surveillance to prevent destructive practices.

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