



The Effect of Locations Adjacent to Other Countries on the Development of Fishery Technology in the Sangihe and Talaud Islands

*Ishak Bawias, Fitria Lungari

Department of Fisheries and Marine, Nusa Utara State Polytechnic, Sangihe and Talaud Islands, Indonesia

*Correspondence author: opoishak@gmail.com

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Abstract

This article aims to analyze the effect of a location close to foreign countries on the development of fishery technology in the Sangihe and Talaud Islands. This location provides both opportunities and challenges for fisheries development in the region. This article uses a descriptive-analytical method with secondary data obtained from various sources. The analysis results show that the location close to foreign countries has a positive and negative influence on the development of fishery technology in the Sangihe and Talaud Islands. Positive influences include cooperation, technology transfer, and international markets. Negative influences include competition, fish theft, and environmental damage. This article recommends that the government and society increase efforts to seize opportunities and overcome existing challenges.

Keywords: Fishery Technology, Nearby Locations, Foreign Countries, Sangihe and Talaud Islands

1. Introduction

The Sangihe and Talaud Archipelago is one of Indonesia's border areas at the northern tip of North Sulawesi. This region consists of two regencies: Sangihe Islands Regency and Talaud Islands Regency. This region has a land area of approximately 1,257 km² and a sea area of approximately 48,000 km². This region has a large fishery resource potential from the fisheries and aquaculture sectors. According to data from the North Sulawesi Maritime Affairs and Fisheries Service for 2019, capture fisheries production in this region reaches 36,000 tons yearly, while aquaculture production reaches 1,500 tons yearly [1][2].

One of the important aspects of developing fishery technology in the Sangihe and Talaud Islands is the location close to foreign countries. This location provides both opportunities and challenges for fisheries development in the region.

Some things to note are as follows [2].

They first increased the quality and quantity of catches by applying environmentally friendly fishing technology in local water conditions. This technology can help fishermen to catch fish more efficiently, reduce operational costs, and avoid environmental damage. Second, encourage product diversification by developing processing and marketing techniques to increase fishery products' added value and competitiveness in domestic and international markets. This technology can help businesses produce quality, varied products that meet consumer demands. Third, strengthen cooperation between the government, business actors, universities, research institutions and the public in fisheries to increase human resource capacity, infrastructure and access to information. This collaboration can help to develop fishery technology innovation, facilitate the transfer of knowledge and technology, and increase

community involvement in the management of fishery

resources. Fourth, improve the welfare of fishing communities and fish farmers through productive economic empowerment, social culture and a sustainable environment. This empowerment can help increase fishing communities' income, health, education, and quality of life. Fifth, maintaining the sovereignty and security of Indonesian territorial waters through law enforcement and supervision of illegal, irregular and irresponsible fishing activities (IUU fishing) by foreign countries. This law enforcement and oversight can help to protect Indonesia's fishery resources from exploitation and theft by outside countries [3].

This article aims to analyze the effect of a location close to foreign countries on the development of fishery technology in the Sangihe and Talaud Islands. This article is expected to provide useful information and input for the government and the community in formulating appropriate strategies and policies for developing fishery technology in the region.

2. Materials and Methods

This article uses a descriptive-analytical method with secondary data from various sources [4], such as journals, books, reports, articles, websites, etc. Secondary data includes data on the potential and condition of fishery resources in the Sangihe and Talaud Islands, data on fishing technology used by local fishermen, data on cooperation and conflicts between Indonesia and foreign countries in fisheries, etc. The secondary data obtained were then analyzed using the SWOT analysis technique (Strengths, Weaknesses, Opportunities, Threats) to identify internal and external factors that influence the development of fishery technology in the region. The results of the SWOT analysis are then used to formulate strategies and recommendations appropriate to the area's conditions and needs [5].

3. Results and Discussion

Based on the SWOT analysis that has been carried out, the followings are the results and discussion regarding the influence of locations close to foreign countries on the development of fishery technology in the Sangihe and Talaud Islands.

3.1. Strengths

The Sangihe and Talaud Islands have several strengths or advantages that can support the development of fishery technology in the region. Some of these strengths are as follows [2].

1. Wealth of fishery resources: The Sangihe and Talaud Archipelago has large and diverse fishery resource potential, both from the capture fisheries and aquaculture sectors. This area has around 92 tuna fishing potentials (PPKT) scattered around large and small islands¹. This region also has around 1,000 hectares of potential land for seaweed cultivation². In addition, this area also has the potential for cultivating grouper, red snapper, milkfish, van mei shrimp, etc.
2. Strategic location: The Sangihe and Talaud Archipelago has a strategic location because it is on the international trade route between Indonesia and Asia Pacific countries. This location allows this region to develop its market for fishery products at home and abroad. This location also provides opportunities for this region to enhance cooperation with neighboring countries in fisheries, such as technology transfer, joint research, capital assistance, etc.
3. Maritime culture: The Sangihe and Talaud Archipelago has a strong maritime culture because most inhabitants work as fishermen or fish farmers. This maritime culture allows this region to increase public participation and awareness of the development of fisheries technology. Communities have local knowledge and skills that can be used to adapt and apply fishing technology according to their conditions and needs.

3.2. Weaknesses

The Sangihe and Talaud Archipelago also has several weaknesses or obstacles that can hinder the development of fishery technology in the region. Some of these weaknesses are as follows.

1. Infrastructure limitations: The Sangihe and Talaud Archipelago has limited infrastructure that can hinder community accessibility and mobility in fishing activities. Inadequate infrastructure includes roads, ports, electricity, clean water, telecommunications, etc. This infrastructure limitation can lead to high operational costs, low product quality, and difficulty in distributing fishery products.
2. Limited capital: The Sangihe and Talaud Archipelago has limited capital which can hinder the development and application of fishery

technology in the region. Lack of capital includes financial, physical, social, and intellectual capital. Lack of financial capital can lead to difficulties buying or building modern and efficient fishing or processing equipment. Lack of physical capital can lead to limited and non-standard fishing or processing equipment availability. Lack of social capital can lead to low cooperation and trust between business actors, the government and the public in fisheries. Lack of intellectual capital can lead to a low capacity of human resources regarding knowledge, skills and innovation in fisheries technology.

3. Regulatory limitations: The Sangihe and Talaud Archipelago has regulatory limitations that can hinder monitoring and controlling the quality and sustainability of fishery resources in the region. Inadequate regulations include regulations on fish species, fishing methods, fishing time, ambient temperature, cooling systems, processing systems, storage systems, distribution systems, labeling systems, etc. These regulations must comply with international standards and food safety. The government and society must also enforce this regulation effectively and efficiently [3].

3.3. Opportunities

The Sangihe and Talaud Islands have several opportunities or potentials that can be utilized to develop fishery technology in the region. Some of these opportunities are as follows.

1. Market demand: The Sangihe and Talaud Archipelago has a large and increasing market demand for its fishery products at home and abroad. This market demand is influenced by population growth, income increase, changes in consumption patterns, consumer preferences, etc. This market demand allows this region to increase production and diversify its fishery products using fishing and processing technologies that meet consumer needs and tastes.
2. Technological innovation: The Sangihe and Talaud Archipelago has developed varied technological innovations for fisheries. These technological innovations come from various sources, such as universities, research institutes, businesses, communities, etc. This technological innovation includes fishing, processing, and marketing technology. This technological innovation provides an opportunity for this region to improve the efficiency, quality and sustainability of fishery resources by using

technology appropriate to the region's conditions and needs [2].

3. Regional cooperation: The Sangihe and Talaud Islands have close and dynamic regional cooperation with neighboring countries in fisheries. This regional cooperation includes bilateral, multilateral, and sub-regional cooperation. This regional cooperation covers various aspects, such as technology transfer, joint research, capital assistance, free trade, co-management, etc. This regional cooperation allows this region to increase capacity and competence in developing fishery technology and overcome the problems faced in the fishery sector.

3.4. Threats

The Sangihe and Talaud Islands also have several threats or risks that could disrupt the development of fishery technology in the region. Some of these threats are as follows.

1. Market competition: The Sangihe and Talaud Archipelago has a tight and complex market competition for its fishery products at home and abroad. Product quality, price, consumer preferences, international standards, trade policies, etc., influence this market competition. This market competition poses a threat to this region to reduce the added value and competitiveness of its fishery products if it cannot produce products of high quality, competitive and in line with market demand.
2. Fish theft: The Sangihe and Talaud Islands have frequent and massive fish theft by outside countries in their territorial waters. The theft of fish is carried out by foreign fishing vessels, especially from neighboring countries such as the Philippines, Malaysia, Vietnam, etc. This fish theft threatens this region by reducing the potential and productivity of its fishery resources and harming the region's economy and sovereignty.
3. Environmental damage: The Sangihe and Talaud Archipelago has severe and extensive environmental damage due to non-environmentally friendly fishing activities. This environmental damage includes decreased fish stocks, damage to marine habitats, water pollution, greenhouse gas emissions, etc. This environmental damage threatens this region by reducing the balance and sustainability of its fishery resources and threatening the health and welfare of the community [1].

3.5. Strategies and Recommendations

Based on the results of the SWOT analysis that has been carried out, the following are strategies and recommendations that can be applied to the development of fishery technology in the Sangihe and Talaud Islands.

1. SO Strategies

SO strategy is a strategy that utilizes strengths to maximize opportunities [6][7]. Some SO strategies that can be applied are as follows.

- a. Increase the production and diversification of fishery products by using fishing and processing technologies that are environmentally friendly and under local water conditions to meet domestic and international market demands.
- b. Increasing innovation in fishery technology by developing cooperation between universities, research institutions, business actors, and the public in the field of research and development of fishery technology under the needs and potential of the region.
- c. Enhance regional cooperation with neighboring countries in fisheries to facilitate technology transfer, joint research, capital assistance, free trade, co-management, etc.

2. WO Strategies

WO strategy is a strategy that overcomes weaknesses to take advantage of opportunities. Some WO strategies that can be applied are as follows.

- a. Improving infrastructure that supports fishing activities, such as roads, ports, electricity, clean water, telecommunication, etc., using capital assistance from the government, private sector, and donor agencies.
- b. Increasing fishery business actors' financial, physical, social and intellectual capital by developing programs such as people's business credit (KUR), fishing or processing equipment assistance, fishery cooperatives, training and technical guidance, etc.
- c. Improving standards and regulations for monitoring and controlling the quality and sustainability of fishery resources by adopting international standards and food safety and encouraging community participation in law enforcement and supervision.

3. ST Strategies

ST strategy is a strategy that utilizes strengths to overcome threats [7]. Some of the ST strategies that can be applied are as follows.

- a. Increase the added value and competitiveness of fishery products by using fishing and processing technologies that are environmentally friendly and following local water conditions to face domestic and international market competition.
- b. Increase community participation and awareness of the development of fishery technology by using local knowledge and skills to adapt and apply fishery technology according to their conditions and needs and protect their fishery resources from fish theft by foreign countries.
- c. Increase cooperation between the government, business actors, universities, research institutions, and the public in fisheries to develop fishery technology innovations that can reduce the negative impact of fishing activities on the environment.

4. WT Strategies

The WT strategy is a strategy that overcomes weaknesses to avoid threats [8][9]. Some WT strategies that can be applied are as follows.

- a. Increase community accessibility and mobility in fishing activities by using capital assistance from the government, private sector, and donor agencies to purchase or build modern and efficient fishing or processing equipment and reduce operational costs.
- b. Improving the quality of fishery products by using programs such as people's business credit (KUR), fishing or processing equipment assistance, fishery cooperatives, training and technical guidance, etc., to meet international standards and food safety and increase consumer preferences.
- c. Increase law enforcement and supervision of illegal, irregular and irresponsible fishing activities (IUU fishing) carried out by foreign countries by adopting regulations on fish species, fishing methods, fishing time, ambient temperature, cooling system, processing system, system storage, distribution system, labeling system, etc. and encourage community participation in law enforcement and oversight.

4. Conclusion

This article has analyzed the effect of a location close to foreign countries on the development of fishery technology in the Sangihe and Talaud Islands. Based on the analysis results, the location close to foreign countries has a positive and negative influence on the development of fishery technology in the region. Positive influences

include cooperation, technology transfer, and international markets. Negative influences include competition, fish theft, and environmental damage. This article recommends that the government and society increase efforts to take advantage of opportunities and overcome existing challenges by implementing strategies appropriate to the region's conditions and needs. This article also provides some suggestions for further research, which are as follows. Conduct empirical research to measure the economic, social and environmental impacts of the development of fisheries technology in the Sangihe and Talaud Islands using appropriate quantitative or qualitative methods. Conduct comparative research to compare the development of fishery technology in the Sangihe and Talaud Archipelago with other border areas with similar or different conditions and characteristics. Conduct evaluative research to assess the effectiveness and efficiency of the application of fishery technology in the Sangihe and Talaud Islands and identify the supporting and inhibiting factors.

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