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STRATEGY FOR DEVELOPING CAPTURED FISHERIES IN PEMALANG REGENCY

Strategi Pengembangan Perikanan Tangkap di Kabupaten Pemalang

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ABSTRACT

Pemalang Regency is one of the regencies that has abundant capture fisheries potential. However, there are several problems in developing capture fisheries. This research aims to identify and assess internal and external factors in the development of the capture fisheries sector and to develop a strategy for developing capture fisheries in Pemalang Regency. This research uses SWOT (Strength, Weakness, Opportunity, and Treat) analysis to develop a development strategy. The data collected includes primary data and secondary data. The research results show that the value of Internal Strategic Factors Analysis Summary (IFAS) and External Strategic Factors Analysis Summary (EFAS) have a positive value so it is in Quadrant I. Based on this, an aggressive strategy is the main priority in developing capture fisheries in Pemalang Regency.

Keywords: Captured Fisheries, Pemalang, SWOT

ABSTRAK

Kabupaten Pemalang merupakan salah satu kabupaten yang memiliki potensi perikanan tangkap yang melimpah. Namun terdapat beberapa permasalahan dalam upaya pengembangan perikanan tangkap. Tujuan dari penelitian ini adalah melakukan identifikasi dan penilaian terhadap faktor internal dan faktor eksternal dalam pengembangan sector perikanan tangkap dan menyusun strategi pengembangan sektor perikanan tangkap Kabupaten Pemalang. Penelitian ini menggunakan analisis SWOT *(Strenght, Weakness, Opportunity and Treat)* untuk menyusun strategi pengembangannya. Data-data yang dikumpulkan meliputi data primer dan data sekunder. Hasil penelitian menunjukkan bahwa nilai *Internal Strategic Factors Analysis Summary* (IFAS) dan *External Strategic Factors Analysis Summary* (EFAS) bernilai positif sehingga berada pada Kuadran I. Berdasarkan hal tersebut strategi agresif menjadi prioritas utama dalam mengembangan perikanan tangkap di Kabupaten Pemalang.

Kata Kunci: Pemalang, Perikanan Tangkap, SWOT

INTRODUCTION

Fisheries resources have great potential as a driver of Indonesia's economic growth. In the 2015-2019 period, the sustainable potential value of Indonesian fisheries was 12.01 million tonnes (Anugrah & Alfarizi, 2021). In fact, in several provinces, the fisheries sector is able to make a large contribution to GRDP. In South Sumatra Province, the fisheries sector contributes 2.9% to the Province's GRDP (Heirina & Ayub, 2023). Another study related to the contribution of the fisheries sector to GRDP in Bitung City states that The fisheries sector makes a fluctuating contribution to GRDP in the city (Katiandagho et al., 2019) . This condition indicates that the fisheries sector has the opportunity to contribute to GRDP. On the island of Java, the fisheries sector also has the potential to contribute to the regional economy. Pemalang Regency is one of the districts located on the North Coast of Java Island and has potential fishery resources. In 2021, fisheries production in Pemalang Regency will be one of the largest in Central Java Province, namely 18,386,353 kg (Badan Pusat Statistik Provinsi Jawa Tengah, 2022). Pemalang Regency has 5 Fish Auction Places (TPI), namely TPI Tanjungsari, TPI Asemdoyong, TPI Mojo, TPI Ketapang, and TPI Nyamplungsari. The existence of TPI is a means of supporting fishing activities and supporting the development of the fisheries sector. TPI also has a role in improving the quality of fishery products and as a place for fish trading (Mappiasse et al., 2023).

Various types of fish are produced in Pemalang Regency. Several types of fish that are basic commodities are mullet, anchovies, tembang, mackerel, mackerel, layur, yellow tail, Petek, bambangan, three waja, kuro, black pomfret and kuwe and only anchovies and tembang are superior commodities based on calculations. Location Quotient (LQ), Shift-share (SS), and Specialization (SI) (Maghfiroh et al., 2023) . However, these two fish are less economical when compared to other types of fish which have higher market prices. These two fish have the potential to have a higher selling value if used into products with high economic value. Anchovies also have high nutritional value (Kocu et al., 2023) .

Fisheries production in Pemalang Regency during the 5 year period, namely from 2016 to 2020, the realization of fisheries production, both capture and aquaculture, has exceeded the planned target, but in general, capture fisheries production tends to decrease from year to year (Dinas Perikanan Kabupaten Pemalang, 2021) . In the Pemalang Regency Strategic Plan Document for 2021-2026, several problems with capture fisheries are outlined, including 1) the function of TPI is not optimal, 2) sedimentation occurs which disrupts shipping lanes, 3) there are fishermen who use less environmentally friendly fishinsg gear, 4) fishing in public waters less than optimal, 5) lack of supervision in fishing, 6) during the lean season fishermen do not have side jobs, 7) limited facilities and infrastructure, 8) fishermen's mastery of science and technology is still limited and 9) insufficient capital (Dinas Perikanan Kabupaten Pemalang, 2021). A study conducted by Waridin (2005) also identified the problems of fishermen in Pemalang Regency, including the use of various fishing gear, low catches, low income and fluctuating selling prices at TPI.

Based on these conditions, the capture fisheries sector in Pemalang Regency has the potential to be developed in the future. However, there are a number of challenges in its development. Various problems arise not only from internal factors of fisheries resources but also external factors which also have the potential to have a big influence on fisheries activities. Sedimentation and seasons are external factors that cannot be ignored and must be taken into consideration. Therefore, the aim of this research is to identify and assess internal and external factors in the development of the capture fisheries sector in Pemalang Regency, to develop a strategy for developing the capture fisheries sector in Pemalang Regency.

METHODS

This research was carried out in Pemalang Regency with case studies at 5 TPIs, namely TPI Tanjungsari, TPI Asemdoyong, TPI Mojo, TPI Ketapang, and TPI Nyamplungsari. The research location is presented in Figure 1. This research was carried out from April to August 2023. The data collected included primary data and secondary data. Primary data was obtained directly through field observations and indepht interviews. Meanwhile, secondary data includes literature studies of data and research results that support this study. Data collection techniques were through field observations, indepht interviews with fishermen at each TPI and respondents from the Regional Fish Auction Technical Implementation Unit (UPTD UPI) Pemalang Regency. Tools and materials used in collecting data include writing instruments, cameras and recording devices. The data that has been obtained is then analyzed and analyzed using SWOT analysis (Strange, Weakness, Opportunity and Treat). To answer the first objective, an Internal Strategic Factors Analysis Summary (IFAS) matrix and an External Strategic Factors Analysis Summary (EFAS) matrix were prepared with the following stages (Kamargo et al., 2018).

1. Determine the factors that are strengths, weaknesses, opportunities and threats
2. Determine the ranking of each factor on a scale of 1-4 (ranging from small, medium, large to very large).
3. Assign a weight of 0-1 (not important to most important)
4. Multiplying the weight by the rating

After preparing the IFAS and EFAS matrices, a SWOT analysis was then carried out to develop a strategy for developing capture fisheries in Pemalang Regency. SWOT analysis is intended to identify the positioning of an object to be developed (Wibowo et al., 2021).

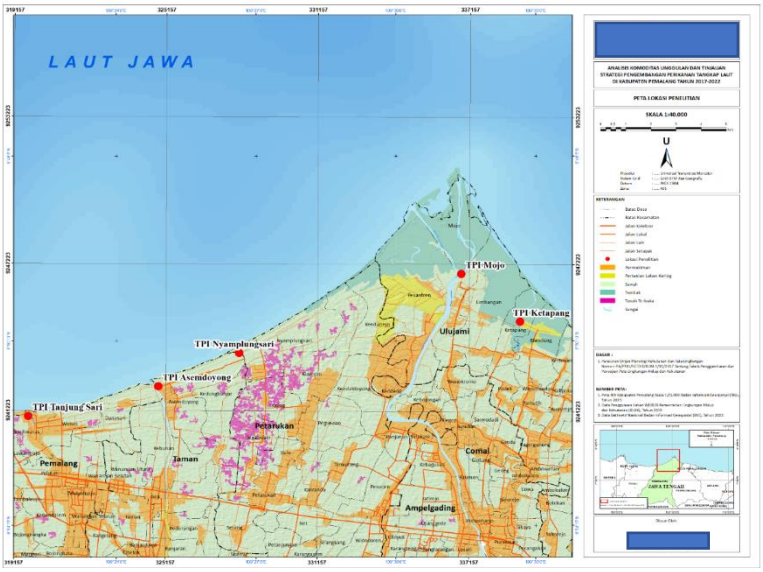

Figure 1. Research Location

RESULT

Table 1. Assessment of Internal Factors to Determine Strengths

Code	Parameter	Rating	Weight	Mark
Strength				
S1	Has 1 Coastal Fishing Port, namely PPP Asemdoyong and 4 active TPIs, namely TPI Tanjungsari, TPI Mojo, TPI Ketapang, and TPI Nyamplungsari	3	0.09	0.27
S2	There is potential for diverse fish resources (small pelagic, large pelagic and demersal fish)	4	0.13	0.52

Code	Parameter	Rating	Weight	Mark
S3	Having fishermen with superior and competent human resources in the field of capture fisheries	3	0.07	0.21
S4	TPI's efficiency level is high, fishermen sell all their catches at TPI	4	0.08	0.32
S5	The catch is able to compete in the market	3	0.13	0.39
	TOTAL		0.5	1.71

Source: Researcher Data Processing, 2023

Table 2. Assessment of Internal Factors to Determine Strengths

Code	Parameter	Rating	Weight	Mark
Weakness				
W1	TPI's facilities and infrastructure are inadequate	2	0.12	0.24
W2	Use of fishing gear with the potential for catches that have low selling value	3	0.12	0.36
W3	Fishermen's capital capabilities are still limited	3	0.15	0.45
W4	Low utilization/processing of products from catches	3	0.11	0.33
	TOTAL		0.5	1.38
	Total IFAS		**1**	**0.33**

Source: Researcher Data Processing, 2023

Table 3. Assessment of External Factors to Identify Opportunities

Code	Parameter	Rating	Weight	Mark
Opportunities				
O1	The strategic geographical condition is located in WPP NRI 712 with diverse fisheries potential	3	0.11	0.33
O2	Market demand for fish commodities is high	3	0.17	0.51
O3	Government support in developing the capture fisheries sector in Pemalang Regency	3	0.14	0.42
O4	Policy on terminating fishing business permits by foreign fleets in the waters of Pemalang Regency	3	0.08	0.24
	TOTAL		0.5	1.50

Source: Researcher Data Processing, 2023

Table 4. Assessment of External Factors to Identify Threats

Code	Parameter	Rating	Weight	Mark
Threats				
T1	The physical condition of coastal areas still experiences tidal floods and high estuary silting/sedimentation	3	0.13	0.39
T2	The density of fishing areas in WPP NRI 712 and competitors in the same type of superior fish in the TPI of surrounding districts	1	0.09	0.09
T3	Pollution of coastal areas, whether from household waste or other activities carried out in coastal areas	3	0.15	0.45
T4	The access road to TPI is still flooded by tidal water	2	0.13	0.26
	TOTAL		0.5	1.19
	Total EFAS		**1**	**0.31**

Source: Researcher Data Processing, 2023

Table 5. SWOT Matrix of Marine Capture Fisheries in Pemalang Regency

Factors Internal / **Factor External**	**Strength (Strength)**	**Weakness**
	1. Has 1 Coastal Fishing Port, namely PPP Asemdoyong and 4 active TPIs, namely TPI Tanjungsari, TPI Mojo, TPI Ketapang, and TPI Nyamplungsari 2. There is potential for diverse fish resources (small pelagic, large pelagic and demersal fish) 3. Having fishermen with superior and competent human resources in the field of capture fisheries 4. TPI's efficiency level is high, fishermen sell all their catches at TPI 5. The catch is able to compete in the market	1. TPI facilities and infrastructure are inadequate 2. Use of fishing gear with potential catches that have low selling value 3. Fishermen's capital capabilities are still limited 4. Low utilization/ processing of products from the catch
Opportunities 1. Strategic geographical conditions, namely being located in WPP NRI 712 with diverse fisheries potential 2. Market demand for fish commodities is high 3. Government support in developing the capture fisheries sector in Pemalang Regency 4. Policy for terminating fishing business permits by foreign fleets in the waters of Pemalang Regency	**SO Strategy** 1. Maintaining the quality of fish by providing ice boxes to store the catch and processing superior fish into a product 2. Enlargement of the Fishing Port and TPI and provision of a fuel logistics system	**ST Strategy** 1. Supervision of the types of fishing gear used to maintain the balance of marine ecosystems and sustainable fishing activities 2. Improving the physical condition of coastal areas such as improving beach safety (breakwater and groyne), and routine dredging of river mouths every year
Threats (Threats) 1. The physical condition of coastal areas still experiences tidal flooding and silting/ high estuary sedimentation 2. The density of fishing areas in WPP NRI 712 and competitors for the same type of superior fish in TPI in surrounding districts 3. Pollution of coastal areas either from household waste or other activities carried out in coastal areas	**WO Strategy** 1. Optimizing human resource institutions by providing training/socialization related to improving capture fisheries and facilitating access to capital loans for fishermen 2. Modernization of fishermen's fishing gear to increase fishermen's income	**WT Strategy** 1. Provision of trash cans, hand washing facilities, toilets and closed sewers to attract consumers 2. Increasing awareness of local communities in maintaining the environmental sustainability of their coastal areas

4. The access road to TPI is still flooded by tidal water		

Source: Researcher Data Analysis, 2023

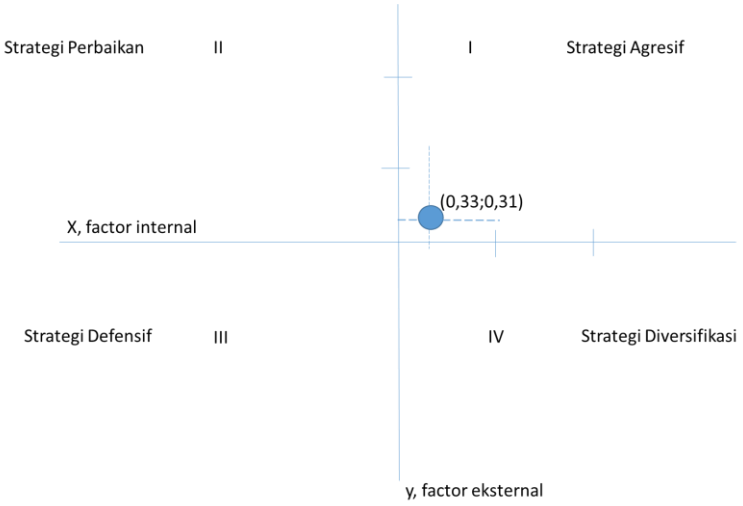

Figure 2. Diagram of SWOT Analysis Results (Source: Researcher Data Analysis, 2023)

DISCUSSION

Assessment of Internal Factors for Capture Fisheries Development

Internal factors function as strengths that can support and encourage the development of capture fisheries or vice versa as weaknesses that can hinder the development of capture fisheries in Pemalang Regency. Internal factors greatly influence the development of capture fisheries directly (Sudarmo et al., 2016).

Pemalang Regency has 1 Coastal Fishing Port, namely PPP Asemdoyong and 4 active TPIs, namely TPI Tanjugsari, TPI Mojo, TPI Ketapang, and TPI Nyamplungsari as auction places for fishermen's catches. The fish potential in Pemalang Regency varies from small pelagic fish, large pelagic, demersal, and also other SDI potential such as squid, Jerbung Shrimp, and Krosok Shrimp. The potential of SDI is a very influential force in the development of capture fisheries in Pemalang Regency. The level of human resources of fishermen is superior and TPI and KUD managers are experienced in the field of capture fisheries. The majority of fishermen in Pemalang Regency sell their fish catch directly at TPI, indicating TPI's high level of efficiency. This condition is in accordance with research conducted by Lavictory et al. (2017) which states that in Pemalang Regency there are four TPIs that have high effectiveness with a score of 100%, namely TPI Asemdoyong, Mojo, Ketapang and Tasikrejo. Fish catches in Pemalang Regency are able to compete in the market. This is characterized by the presence of basic fish species in Pemalang Regency (Yusrin et al., 2017; Maghfiroh et al., 2023).

Of the existing strengths, there are weaknesses in the capture fisheries sector, such as inadequate facilities and infrastructure for TPI in Pemalang Regency which is not evenly distributed, indicated by the condition of sanitation facilities (hand washing places and toilets), waste water disposal facilities, and fish waste disposal at TPI Nyamplungsari which is good (waste water is channeled into closed gutters and covered trash bins) compared to TPI Mojo and TPI Ketapang which respectively use open gutters and uncovered trash bins. Fishing in Pemalang Regency still uses traditional fishing gear such as nylon nets and torches so it is included in the classification of small fishermen. Small fishermen are characterized by using traditional fishing gear and limited production factors and fishing locations that are close to the coast (Alamsyah, 2023). These fishing gear can only catch fish with a low auction value so

they do not reach the fishing target. The catch with Low auction values have a negative impact on fishermen because the selling price is low, so fishermen have limited capital to return to sea, so many apply for capital loans from cooperatives. Processing of catches in Pemalang Regency is still not developed, which is characterized by processed products such as processed salted fish.

Assessment of External Factors for Capture Fisheries Development

External factors are all conditions and factors outside the territory and authority of the Pemalang Regency Government regarding the development of capture fisheries. This factor can be used as an opportunity for development or, conversely, become a threat to the development of capture fisheries in Pemalang Regency. These external factors include environmental conditions, market access, consumers, and existing laws.

The geographic location of Pemalang Regency is strategic, namely that it is located in WPP NRI 712 which covers the waters of the Java Sea which has abundant and economical pelagic fisheries potential (Ma'mun et al., 2019). Market demand for fish commodities in Pemalang Regency is quite high, which has a big influence on the development of capture fisheries. The existence of government support is marked by the existence of socialization and assistance programs in the form of training or socialization for developing human resources for fishermen, assistance with cheap diesel fuel prices for fishing boats, as well as access to capital for local fishermen. There is also a mangrove planting program in coastal areas affected by tidal floods such as TPI Mojo and TPI Ketapang. There is also a policy of terminating fishing business permits by foreign fleets in the waters of Pemalang Regency.

The threat to the fisheries sector in Pemalang Regency can be seen from the poor physical condition of its coastal areas, namely frequent tidal floods (Khaqiqi & Syamsuddin, 2021; Proponco *et al*., 2022). Several TPIs were affected by tidal flooding, especially in the TPI Mojo and TPI Ketapang areas. The level of sedimentation in Pemalang Regency is also relatively high, based on key informants in the field that there was severe shallowing in 2020, to be precise from December 2020 to mid-2021. This resulted in fishing boats having difficulty entering the TPI pier and even many fishing boats ran aground/damaged. Shallowing makes many fishermen reluctant to go to sea because to get/push the boat out of the estuary a distance of 1 (one) meter takes more than 7 hours, which usually only takes about half an hour.

Wave height is one factor that also influences the physical condition of waters. Based on interviews with key informants in Pemalang Regency, the average wave height ranges from 0.5 to 2 meters, and according to some fishermen, they have experienced waves of more than 2 meters while at sea. The high waves also damaged coastal safety structures such as groynes scattered along Tanjungsari Beach. This condition is supported by a study conducted by Muzani et al. (2016) which states that the sea waves that occurred on Pemalang beach have caused beach erosion and damaged coastal safety structures.

The fishing area in the waters of Pemalang Regency in WPP NRI 712 has become increasingly congested, which has caused a decrease in the number of catches. This is because market demand for fish commodities is quite high, especially for superior types of commodities which also have competition for the same types of superior fish in the TPI of surrounding districts, so that many fishermen compete to catch fish including superior types of fish in the same area.

There is pollution in coastal areas and river estuaries in Pemalang Regency. This is supported by a study conducted by Puspita et al. (2018), which states that the river located near the sea in Mojo Village is lightly polluted. This pollution comes from household waste and waste resulting from activities carried out around coastal areas. One of the factors causing coastal pollution is the lack of public awareness regarding throwing rubbish and used ship oil into the waters. The tidal floods that occurred around TPI Mojo and TPI Ketapang made it difficult to access roads to TPI. This is because the access road to TPI was submerged by tidal

floods. Tidal floods also inundated residential communities and school buildings around TPI. The tidal floods that submerged road access and school buildings around TPI Ketapang are presented in Figure 3 and Figure 4 below.

Figure 3. Road Access to TPI Ketapang (Source: Primary Data, 2023)

Figure 4. School Submerged by Rob (Source: Primary Data, 2023)

Pemalang Regency Capture Fisheries Development Strategy

Based on the results of the analysis diagram and SWOT matrix, it is known that the strategic priority obtained is an aggressive strategy, where this strategy is the main strategy for developing capture fisheries in Pemalang Regency and is the main priority. Alternative strategy development based on SWOT analysis is as follows:

1. Maintaining the quality of fish by providing ice boxes to store the catch and processing superior fish into a product. This fish storage ice box is used to ensure that the catch remains fresh before it reaches consumers. Quality fish has the opportunity to enter the export market.
2. Enlargement of fishing ports and TPI and provision of fuel logistics systems. In order to improve and develop capture fisheries, a container or place is needed that can accommodate large-scale auction activities. Adding floors and roofs to TPI buildings could be one strategy that can be implemented. In addition, it is necessary to provide a fuel logistics system to meet the needs of vessels and equipment needed for capture fisheries activities in Pemalang Regency.
3. Supervision of the types of fishing gear used to maintain the balance of marine ecosystems and sustainable fishing activities.
4. Improving the physical condition of coastal areas, such as improving coastal protection (breakwaters and groynes), and routine dredging of river mouths every year.
5. Optimizing HR institutions by providing training/socialization related to improving capture fisheries and facilitating access to capital loans for fishermen. The role of HR institutions in the tagcap fisheries sector needs to be optimized by holding programs that can improve the quality of human resources for fishermen.
6. Modernization of fishermen's fishing gear to increase fishermen's income.

7. Provision of trash cans, hand washing stations, toilets and covered sewers, to attract consumers. This provision is intended to not cause strong odors that could disrupt fish auction activities.
8. Increased awareness of local communities in preserving the environment of their coastal areas. The physical condition of coastal areas, especially at TPI Mojo and TPI Ketapang, still frequently experiences tidal floods. This can become a serious threat if not addressed immediately. Therefore, there is a need to increase local community awareness, such as not throwing rubbish and waste oil around the coast or waters.

CONCLUSION

The IFAS value is positive where the internal strengths are greater than the existing weaknesses. Likewise, the EFAS value is positive where the opportunities outweigh the existing threats. Based on the IFAS and EFAS values, the position of capture fisheries development in Pemalang Regency is in quadrant I where aggressive strategies are the main priority in fisheries development. Therefore, development strategies are carried out based on the strengths and opportunities that exist but still paying attention to any existing weaknesses and threats.

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