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The Development Strategy of Pondokdadap Coastal Fishing Port, Malang Regency, East Java

Cicik Setia Ningsih, Agus Suherman* & Hendrik Anggi Setiawan
Department of Capture Fisheries, Faculty of Fisheries and Marine Sciences, Diponegoro University, Semarang, Central Java, Indonesia
*Corresponding author, email: lpgsuherman2@gmail.com

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ABSTRACT A successful capture fisheries business requires a fishing port with excellent facilities. This study, therefore, aims to analyze the current facility utilization rate of Pondokdadap, The Coastal Fishing Port (CFP) and formulate a suitable development strategy. The study was conducted using a descriptive survey from January to April 2021. Twenty-four respondents comprising 11 CFP (Coastal Fishing Port) and FAP (Fish Auction Place) employees and 13 fishers and fish traders were obtained using the inclusion criteria. Primary data was collected through structured interviews based on a questionnaire, while secondary data were obtained through literature reviews on books, articles, and journals related to research. Subsequently, an analysis of facility utilization at CFP Pondokdadap was carried out, while a SWOT analysis was performed on the proposed alternative development strategy. Based on the results, the existing physical condition of the facilities is satisfactory, with varying utilization rates. However, the Government and the CFP Pondokdadap management are encouraged to implement other development strategies, for instance, strengthening fisheries competitiveness by maintaining fish quality, optimizing Sempu Island as a natural breakwater and marine aquaculture fisheries, developing a fishery information system, building supporting facilities at CFP Pondokdadap, as well as improving the quality of human resources, apparatus, and fishing communities at CFP Pondokdadap.

Keywords: Development strategy; CFP Pondokdadap; SWOT analysis

INTRODUCTION

According to Septaria (2015), a fishing port comprises land and surrounding waters with specific limits as a system of government activities and business activities, equipped with shipping safety and fisheries-supporting activities, to enable fishing vessels to rest anchor and unload fish. Capture fisheries activities in an area are significantly related to the existence of fishing ports as an infrastructure to support the optimal management of fisheries resources (Suherman, 2007; Suherman & Dault, 2009; Lubis & Pane, 2012; Lubis & Pane, 2017). To achieve operational productivity and optimization of fishing ports, excellent development strategies are required to provide facilities and services (Rangkuti *et al*., 2018).

Strategy development of a fishing port can be based on existing subjects or objects. The subjects, in this case, refer to the managers of fishing ports concerning their duties of providing services to port service users, for instance, operational activities in fishing port s and services provided to relevant stakeholders (Suherman *et al*., 2020; Suherman *et al*., 2020[a,b,c]). Meanwhile, the objects refer to the managed aspects, including using facilities following applicable regulations or regulations. Object-based development, in particular, is a part of government policies, both central and regional, which are realized through laws and regulations. In Indonesia, one of these laws and regulations related to the development of fishing port facilities is the Decree of the Ministry of Marine and Fisheries Affairs Number 6 of 2018 concerning the Fishery Port Master Plan. Based on this regulation, to achieve a fishing port that can support fishery activities, there must be planned development and management of the fishing port, which considers the carrying capacity of fish resources in each "fishing ground" or State Fisheries Management Area of the Republic of Indonesia (WPPNRI), whether carried out by the Central Government, provincial, regional governments, or by state-owned enterprises and private sector.

The Coastal Fishing Port (CFP) Pondokdadap is one of the Indonesian fishing ports located in Malang, East Java, and included in the waters of the Indian Ocean (WPP NRI 573), which are a fishing ground for tuna fish resources (Nurani *et al*., 2014). This fishing port is part of the Technical Implementation Unit (UPT) under the Department of Marine and Fisheries Affairs of East Java Province and provides port technical services and business governance and services.

In April 2021, CFP Pondokdadap fishery production was 750.798 Kg with a production value of IDR 11.836.194.900, which is a 139% increase, compared to March 2021, where production of 314.694 kg was recorded. This makes CFP Pondokdadap the fishing port with the third-highest total fish production in East Java Province, after NFP Brondong and CFP Muncar (CFP Pondokdadap, 2021). Yellowfin tuna (*Thunnus albacares*) dominate the total fishery production, comprising 37% of the total production volume of 286.1 tons. As one of the largest tuna fishing ports on the south coast of East Java, CFP Pondokdadap has a target to improve the quality of port services. These services generally include providing required goods/services to fishers/fishery entrepreneurs and the public to enable them to advance their business using the facilities provided (Suherman *et al*., 2020; Suherman *et al*., 2020[a,b,c]). The existing physical conditions of most CFP Pondokdadap facilities are entirely satisfactory. However, several challenges regarding the essential and functional facilities were observed.

These challenges include water receding at the dock, which is feared to affect the quality of fish, and poor hygiene maintenance of the Fish Auction Place (FAP), which can reduce the number and quality of fish sold (Lubis, 2000). Another challenge observed is the non-operational condition of the Integrated Cold Storage Building, which is necessary to provide fish storage services for fishers and sellers. A functional fish cold storage facility is expected to increase the selling value of the catch (Ahsan *et al.*, 2019). Furthermore, the docking area for ship repairs at CFP Pondokdadap has not been available, and the port visitor parking area is not on the right site. Adly (2013) report showed that parking facilities at the port affect security and comfort. The availability of comfortable and safe parking facilities and the high proximity of the parking location to the port entrance is bound to increase the comfort of visitors.

Further research on the port facilities at CFP Pondokdadap is also required to determine the facility utilization, analyze the existing conditions of facilities, especially the primary and functional facilities with an essential role in the fishing port, as well as formulate strategies for port development, to provide a complete picture to the port stakeholders. The development of fishing port facilities at CFP Pondokdadap will help support capture fisheries activities, inseparable from the port's role. Suherman (2011) described the development and maintenance of the NFP Pengambengan facility as a crucial factor in providing excellent service by the port management to enable ships, fishers, and others to carry out activities optimally.

This study, therefore, aims to analyze the facility utilization at PPP Pondokdadap and formulate a development strategy based on this analysis. The study is also expected to provide input to aid the Government in making policies related to CFP Pondokdadap and provide information to the port's managers and stakeholders.

MATERIALS AND METHODS

Study location and duration

This study was conducted at the Pondokdadap Beach Fishing Port, Sendangbiru Hamlet, Tambakrejo Village, Sumbermanjing Wetan District, Malang Regency, East Java Province (Figure 1), from January to April 2021.

Research method

This study used a descriptive survey method to collect primary and secondary data on the condition of basic, functional, and supporting facilities at CFP Pondokdadap. Primary data was collected using structured interviews based on a questionnaire, while secondary data, including production and supplies, were obtained through a literature review on books, articles, and journals related to research. A total of 24 respondents were obtained using purposive sampling based on the inclusion criteria of people considered the primary users of port facilities, people who often carry out activities at CFP Pondokdadap, and people who understand the condition of facilities at CFP Pondokdadap. These respondents comprised 11 CFP and FAP employees and 13 fishers and fish traders.

Facility utilization rate analysis

This method compares the facilities' capacity with the actual utilization level. In addition, this calculation determines whether to increase the available facilities to accommodate more significant port activities. The utilization rate is calculated using the equation below (Lubis, 2000; Suherman, 2010; Suherman, 2011).

$$\text{Utilization rate} = (\text{Usage of facilities}/\text{Capacity of facilities}) \times 100\%$$

This calculation is performed for the port area facilities, the length of the pier, the area of the FAP, the volume of water and fuel tanks, and the parking area.

Existing condition analysis

According to Kriyantono (2006) and Sugiyono (2010), the Likert scale measures attitudes, opinions, and perceptions about social events or phenomena. However, Irawati & Shinta (2015) and (Putri *et al.*, 2019) described the Likert scale as a reference in preparing questionnaires distributed to respondents, using five assessments. In this study, the weights used were excellent/very satisfied (5), sound comfortable (4), moderate (3), sour/dissatisfied (2), and very bad/very unhappy (1). The analysis was conducted to determine the current field conditions based on respondents' opinions in the satisfaction surveys. Subsequently, the ideal criteria score was calculated using the equation below.

$$\text{Criterion score} = \text{Scale value} \times \text{Number of respondents}$$

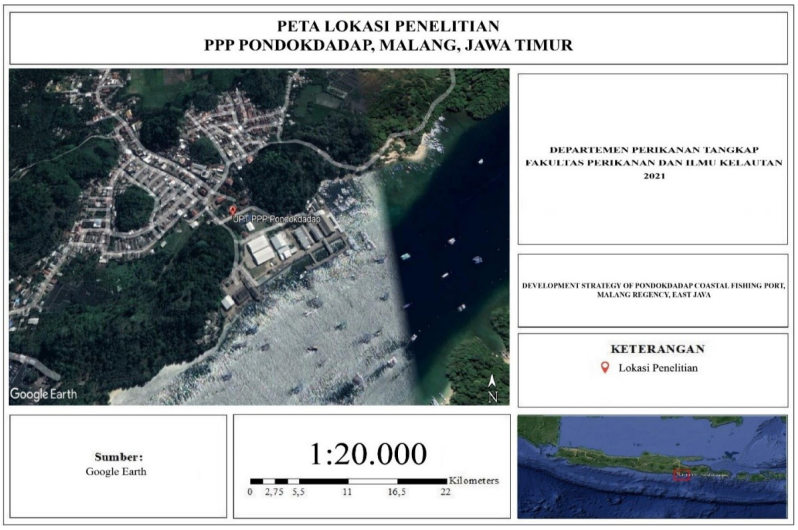

Figure 1. A research map of CFP Pondokdadap.

Table 1 shows the calculation of the ideal score for each criterion.

Table 1. Calculation of the ideal score for a Likert scale.

Formula	Scale
5x24=120	Very good
4x24=96	Good
3x24=72	Enough/ Average
2x24=48	Not good
1x24=24	Very Not Good

The interval distance and rating scale were then determined from the criterion score to obtain the Likert scale criterion value (Table 2).

$$\text{Distance Interval} = \frac{\text{Score Min - Score max}}{\text{Total Score}}$$

$$= \frac{120-24}{5}$$

$$= 19.2$$

Table 2. The Likert scale assessment criteria.

Score	Scale
100.8 – 120	Very good
81.6 – 99.8	Good
62.4 – 80.6	Enough/ Average
43.2 – 61.4	Not good
24 – 42.2	Very Not Good

SWOT analysis

A SWOT analysis was performed to analyze the basic and functional port facilities for the port facility development strategy at CFP Pondokdadap. In addition, the development strategy was formulated by creating an internal-external matrix with the criteria below. (1). Column 1 contains all the factors owned by the company and comprises two parts: the internal / "IFE" (Internal Factor Evaluation) and external factors/"EFE" (External Factor Evaluation); (2). Column 2 contains the weighting of each factor, starting from 0.2 (very important), 0.15 (important), 0.10 (enough), 0.05 (not important), to 0.00 (very unimportant); (3). Column 3 is filled with the rating calculations for these factors based on their effect on conditions; (4). Column 4 is filled with the results of multiplying column 2 by the rating in column 3; (5). The weighting scores for each internal and external factor.

RESULTS AND DISCUSSION

Overview of research sites

Malang regency is the second-largest area in East Java after the Banyuwangi regency. Jombang regencies border this regency in the north, Lumajang and Probolinggo regencies in the east, Kediri and Blitar regencies in the west, and the Indian Ocean in the south. According to the Malang Regency Regional Regulation Number 14 of 2018, the regency has an area of 3.534.86 km^2 or 353.486 ha, divided into land and sea areas, covering an area of 2.977.05 km^2 and 557.81 km^2, respectively. CFP Pondokdadap is a Type C Fishing Port in Malang Regency and the largest tuna producing sector in East Java. The fishing gears available in this fishing port are handlines, fishing rods, and purse seines. Furthermore, Sempu Island supports capture fisheries at CFP Pondokdadap as a natural breakwater facility. The port has become increasingly popular for the Fisherman Fish Stall, which functions as a facility for selling fishery products to local communities.

CFP Pondokdadap profile

CFP Pondokdadap is a Technical Implementation Unit of the Department of Marine Affairs and Fisheries of East Java Province, which has the task of performing some of the technical functions of the Office in the field of technical services for coastal fishing ports, business governance, services, administration, and community services. The main commodity of CFP Pondokdadap's eco-fishing port is tuna, while the four main aspects are port functions and services, adequate port facilities and infrastructure, security of fishery production, and cleanliness and health of the port environment. CFP Pondokdadap is a class C fishing port or coastal fishing port, according to Minister of Marine and Fisheries Affairs Regulation No. 8 of 2012, with a vision" to become a reliable technical implementing unit to ensure the continuity and sustainability of fishery productivity and ensure quality and sustainability in community-based use of coastal and marine resources." The head of the port leads the organizational structure of CFP Pondokdadap, followed by the head of the administrative sub-section, the head of the operational section, and the head of the SKP management and supervision section. CFP Pondokdadap's Operational Working Area is divided into four areas: the land work area, the water work area, the land operation area, and the water operation area.

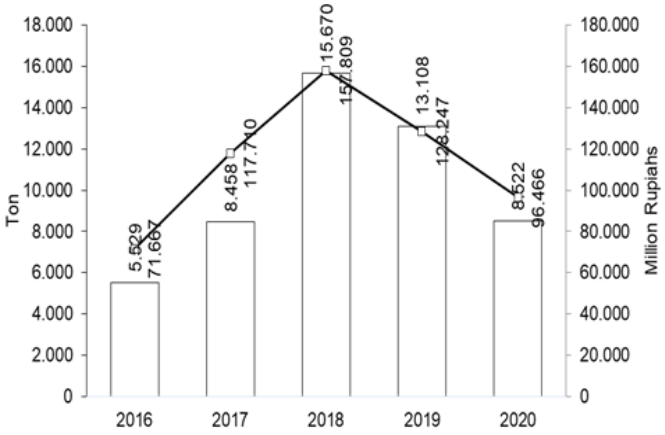

Figure 2. The fish production and total income at CFP Pondokdadap (CFP Pondokdadap, 2021).

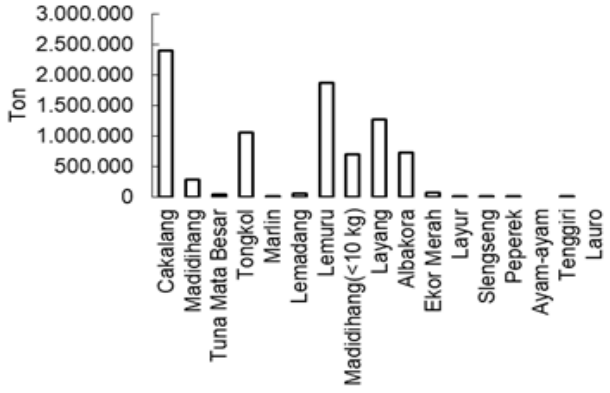

Figure 3. Fish production by type (CFP Pondokdadap, 2021).

CFP Pondokdadap fish production fluctuated from 2016 to 2020, with the most negligible value of 5.529.193 tons recorded in 2016, while the highest value of 15.669.874 tons was recorded in 2018. Similarly, the minor income generated from fish production of IDR 71.666.628.898 was recorded in 2016, while the highest income of IDR 157.809.161.182 was recorded in 2018. This fluctuation occurred due to several factors, including the number of fishing vessels, length of fishing trips, type of fishing gear, fishing season, and the number of ships landing fish (Figure 2).

Supplies at CFP Pondokdadap

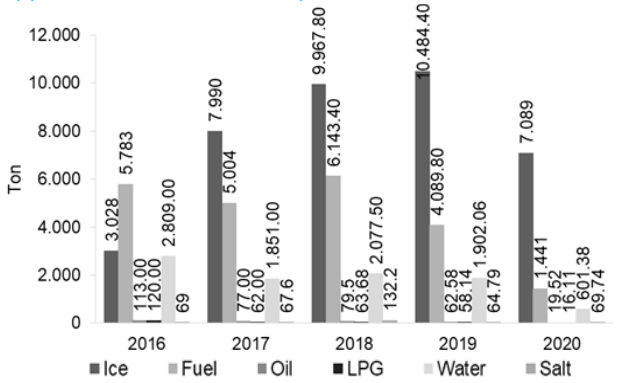

Figure 4. Supplies at CFP Pondokdadap (CFP Pondokdadap, 2021).

Figure 4 shows the most dominant supply needs are ice, fuel, and water, with the highest demands of 10.484.4 tons, 6.143.4 tons, and 2.809 tons, respectively, recorded in 2019, 2018, 2016, respectively.

Facility utilization rate analysis at CFP Pondokdadap

Table 3 shows the utilization level of several primary and functional facilities at CFP Pondokdadap.

Table 3. The analysis of the facility utilization at CFP Pondokdadap.

Facility name	Utilization rate	Note
Port pool area	186%	Beyond optimal
Pier length	38%	Not optimal
Area of TPI	71%	Not optimal
Water reservoir volume	56%	Not optimal
Fuel tank volume	86%	Not optimal
Parking area	97%	Not optimal

Source: Research result, 2021.

Based on Table 3, the utilization rate of several primary and functional port facilities is below optimal. The factors influencing the use of each facility differ. For instance, the utilization of the port pool is evident from the number of ships mooring, loading, and unloading at the port. However, for the length of the pier, the duration of the fishing trip at CFP Pondokdadap is longer compared to the ship leaning on the port pier.

CFP Pondokdadap development strategy analysis

This analysis focuses on both internal and external factors of CFP Pondokdadap facilities, each factor with its aspect. The internal factors are the strengths and weaknesses, while the external factors are the opportunities and threats. This SWOT analysis aims to formulate a development strategy to significantly improve port facilities at CFP Pondokdadap. For this analysis, data were collected through questionnaire interviews with respondents.

After the data processing, the next step is the determination of coordinates. The grand strategy matrix was obtained by determining the coordinates or points between the X-axis, which is the result of subtraction between strengths and weaknesses, and the Y-axis, the result of removal between opportunities and threats. According to Emhas (2019), the method used is to place the total score for internal and external factors. In this method, the results of the internal factors (strengths and weaknesses) and external factors (opportunities and threats) are reduced, respectively (Table 4). The result of subtracting each aspect is then used as the X coordinate point and Y coordinate point, to obtain the meeting point. Figure 5 shows the coordinates obtained (X=0.445; Y=0.267).

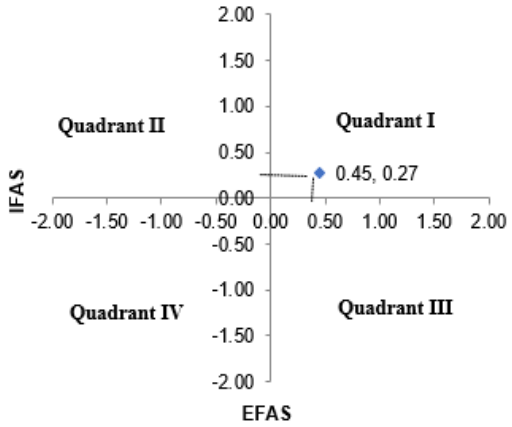

Figure 5. The grand strategy matrix (Research result, 2021).

Table 4. Scoring internal and external factors.

No	Internal factors (Strength)	Rating	Weight	Score
1.	The high potential of fish resources in WPP NRI 573, which has significant economic value and export value	4	0.110	0.440
2.	The existence of Sempu Island as a natural protector (natural breakwater)	4	0.106	0.424
3.	The presence of facilities at the port in the form of a Fisherman Fish Kiosk	4	0.112	0.448
4.	Budget support from the East Java Provincial Government	3	0.084	0.252
5.	The location is relatively close to the marine tourism area	3	0.105	0.315
	Total			1.879

Source: Research result, 2021

Table 4. Scoring internal and external factors.

No	Internal factors (Weaknesses)	Rating	Weight	Score
1.	Lack of cleanliness around the port dock area	3	0.094	0.282
2.	Not operating an ice factory or warehouse (ICS)	3	0.093	0.279
3.	The ship docking area is not yet available in the port area	3	0.102	0.306
4.	Land facilities for street vendors have not been neatly arranged	3	0.091	0.273
5.	Irregular harbor visitor parking	3	0.098	0.294
	Total			1.434
No	External factors (Opportunities)	Rating	Weight	Score
1.	The existence of fish entrepreneurs and investors in CFP Pondokdadap	4	0.122	0.488
2.	The development of fishery and fish processing businesses at CFP Pondokdadap	3	0.110	0.330
3.	Extensive fish marketing and distribution network	3	0.099	0.297
4.	Export of tuna to the European Union or abroad	3	0.099	0.297
5.	Fish market demand continues to increase	3	0.110	0.330
	Total			1.742
No	External factors (Threats)	Rating	Weight	Score
1.	Effect of season on catch	3	0.084	0.252
2.	IUU Fishing is still happening, which destroys fish stocks	3	0.091	0.273
3.	Disaster-prone geographic location	3	0.071	0.213
4.	Demand for high quality fish	4	0.113	0.452
5.	Unclear CFP Pondokdadap land status with other parties	3	0.095	0.285
	Total			1.475

Source: Research result, 2021.

Operational activities at CFP Pondokdadap

Figure 2 shows the numerous factors responsible for the fluctuating fish production, including the number of fishing vessels, length of fishing trips, fishing gear used, fishing season, and the number of ships landing fish. In 2020, fish production decreased more drastically than in 2018 because fishing vessels outside the Pondokdadap area or andon fishers outside the island were prohibited from landing their catch. The Pondokdadap CFP implemented this policy because the community around the port forbade outside fishers from entering the Pondokdadap area due to the COVID-19 outbreak/pandemic. The fluctuation in production was also in line with the total income generated from fishery activities at CFP Pondokdadap, which is closely related to the fishing season in the area, estimated to be in April-September.

According to Nurani *et al*. (2014), the waters of the Indian Ocean in Southern Java are a fishing ground for tuna fish resources. However, the water conditions change with the season, which causes the presence of tuna fish to be unstable throughout the year. Between June and July, there is a higher prevalence of tuna fish at CFP Pondokdadap, and the tuna catch tends to be higher than in August and September, where the tuna prevalence and catching tend to be lower. This is probably because upwelling tends to occur in the Indian Ocean, Southern Java, from June to July.

Based on the data recorded in 2020, the most prevalent species in these waters is skipjack tuna, followed by lemuru fish, scad fish, and tuna. Similarly, the most caught species were skipjack tuna, lemuru fish, tuna fish, albacore tuna, yellowfin tuna <10 kg, and tuna yellowfin, with total production values of 2.390.380, 1.056.270 tons, 723.321 tons, 280.023 tons, 701.255 tons, and 1.875.045 tons. According to Firdaus *et al*. (2018), the high fisheries production in Malang Regency is supported by the CFP Pondokdadap, as shown in Figure 3.

Figure 4 shows the fluctuations in need for supplies at CFP Pondokdadap over the last five years. The six significant supplies used at the port are ice, fuel, oil, LPG, water, and salt. However, ice is the most demanded supply, followed by diesel and water. These supply needs are supported by providing supply facilities within the port. A study by Wijayanto *et al*. (2014) on CFP Pondokdadap discovered fishers bring 80-150 blocks of ice depending on the length of the trip plan, to maintain the catch quality while the fuel use per trip is about 600 litres for two weeks.

The existing condition of facilities at CFP Pondokdadap

The existing condition of the facilities at CFP Pondokdadap is used to analyze the facilities based on the Likert scale scores or values that match the criteria provided in the questionnaire. Table 5 shows the conditions of the 15 facilities used for the questionnaire, with ten facilities having good conditions and five facilities having good/average conditions. Scores in the range of 81.6 to 99.8 are classified as suitable, while scores in the range of 62.4 to 80.6 are classified as sufficient/average. Sutrini *et al*. (2018) defined condition analysis as a technique to determine the condition of functional facilities at the port. The physical condition of operating facilities was determined by direct observation of each facility and through candid interviews with each facility's manager.

Table 5. Assessment of the existing condition of facilities at CFP Pondokdadap.

No	Facility Name	Score	Information
1	Road Access	95	Good
2	Dock	94	Good
3	Plaster	86	Good
4	Drainage	71	Enough
5	Harbor Pool	92	Good
6	TPI building	82	Good
7	Poskamladu building	94	Good
8	Reservoir Water/Reservoir	84	Good
9	Workshop building	65	Enough
10	Fisherman Fish Kiosk	97	Good
11	Ice Warehouse/ICS	74	Enough
12	Administration Office	99	Good
13	SPBN	81	Good
14	Parking area	76	Enough
15	Area Fence	71	Enough

Source: Research result, 2021.

Alternative strategy for CFP Pondokdadap

Figure 5 shows the priority strategy used is in quadrant I: the Strength – Opportunity (SO) Strategy which utilizes strengths to obtain maximum opportunities. This strategy is bound to enable CFP Pondokdadap to exploit existing strength factors to create as much opportunity as possible. According to Reza *et al*. (2019), the SO strategy uses elements of strength to exploit opportunities, while the ST strategy uses elements of strength to deal with threats. Table 6 shows several suitable strategies for the development of CFP Pondokdadap facilities.

Based on Figure 5 and Table 6, the following priority strategies can be carried out at CFP Pondokdadap.

CFP Pondokdadap needs to strengthen the competitiveness of fisheries through inspection of catches, checking the quality of fish from the handling process onboard to the distribution process, and increasing the availability of Hygienic TPI facilities. Generally, fishing port activities begin from fish landing and processing to fish marketing activities. Handling of captured fish comprises two stages: handling on board and handling on land. The handling of fish after catching plays a crucial role in obtaining the maximum selling value of fish. This handling stage

Table 6. SWOT Analysis Matrix.

EFAS	IFAS	
	Strengths (S)	*Weakness* (W)
	1. The high potential of fish resources in WPP NRI 573, which has significant economic value and export value	1. Poor environmental hygiene around the port dock area
	2. The existence of Sempu Island as a natural protector (natural breakwater)	2. Inoperative an ice factory or warehouse (ICS)
	3. The presence of facilities at the port in the form of a Fisherman Fish Kiosk	3. The ship docking area is not yet available in the port area
	4. Budget support from the East Java Provincial Government	4. Poorly arranged land facilities for street vendors
	5. Good proximity to the marine tourism area	5. Irregular harbour visitor parking
Opportunities (O)	SO	WO
1. The presence of fish entrepreneurs and investors in CFP Pondokdadap	1. Strengthening the competitiveness of fisheries through regular inspection of catches and checking the quality of fish from the handling process onboard to the distribution process and increasing the availability of Hygienic TPI facilities.	1. Creating and improving a clean and hygienic port environment
2. The development of fishery and fish processing businesses at CFP Pondokdadap	2. Optimizing Sempu Island as a natural breakwater for fisheries, including aquaculture (floating cages).	2. Build ship docking facilities to increase the ease of ship repair for fishers and fisheries entrepreneurs.
3. Extensive fish marketing and distribution network	3. Developing a fishery information system, especially in implementing online fish marketing in the port area.	3. Optimizing the presence of ICS as a means of maintaining the quality of fish
4. Export of tuna to the European Union or abroad	4. Development and construction of functional and supporting facilities at CFP Pondokdadap	4. Optimal arrangement of industrial zones for large and small scale (street vendors).
5. Continuously increasing fish market demand	5. Improving the quality of human resources, apparatus, and fishing communities at CFP Pondokdadap.	5. Providing improved order, security, and comfort at fishing ports.

EFAS	IFAS	
	Strengths (S)	*Weakness* (W)
Threats (T)	ST	WT
1. The effect of season on catch	1. Developing new business alternatives, including the development of aquaculture	1. Eradication of IUU Fishing
2. The practice of IUU Fishing which destroys fish stocks	2. Increasing fisheries surveillance activities through local PSDKP	2. Maintenance of fishing port facilities regularly every year
3. Disaster-prone geographic location	3. Preserving Sempu Island as a harbour protector from natural disasters (big waves or tsunamis).	
4. Demand for high-quality fish	4. Optimizing existing facilities (ICS, KIN Hygienist) to improve the quality and quality of fish	
5. Unclear CFP Pondokdadap land status with other parties	5. Institutional revitalization among stakeholders at CFP Pondokdadap	

Source: Research Result, 2021.

determines the selling value and the subsequent utilization process, and the quality of the processed fish products produced. Hygienic handling and placement of fish is a prerequisite in maintaining the catch quality because good or bad handling directly influences the quality of fish as food ingredients or raw materials for further processing.

Similarly, the storage of fish also influences the quality of fish sold. For instance, inappropriate storage conditions, including hot temperatures, exposure to direct sunlight, improper hygiene, are bound to accelerate the decline in fish quality. Therefore, Pondokdadap CFP catches must be handled with good supporting equipment, for instance, clean baskets, sufficient trolleys, and speedy team member services. Pondokdadap CFP also needs to ensure proper environmental hygiene of the TPI, minimize physical, chemical, and microbiological damage, and slow down the biochemical processes responsible for fish spoilage. Hasani *et al*. (2020) believe implementing hygienic FAP is essential to achieve excellent operational activities and facilities at the port.

CFP Pondokdadap should optimize Sempu Island as a natural breakwater for fisheries, including aquaculture (floating cages). The utilization of Sempu Island as a natural breakwater, in this case, is to develop marine aquaculture around the island. Properly managed marine aquaculture contributes positively to ecosystem-based management. However, to prepare Sempu Island as a natural breakwater, the Government must provide the required facilities, for instance, ponds, closed/recirculating systems, flow-through, and net pens/cage. Achieving sustainable mariculture development requires a management system where the effects of mariculture on ecosystem services are considered. This process includes mariculture management aimed at maximizing the availability of valuable goods while minimizing the occurrence of detrimental effects (Alleway *et al*., 2019). According to Suryono *et al*. (2017), the development of marine aquaculture is an effort to increase production and preserve environmental capabilities with the capacity to balance fishing methods.

Develop a fishery information system, especially in implementing online fish marketing within the port area. The use of information technology in the marketing sector has been overgrown through numerous significant changes in digitalization, capital mobility, and information liberalization. This enables consumers to place orders and make purchases, irrespective of place and time. Consequently, business expansion now enjoys better flexibility, widespreadness, affordability, interactiveness, promotional media, transparency of operational costs, digitized products/services, streamlined system distribution, ease, and effectiveness of commercial transactions across cultural and national boundaries. This, in turn, increases the ease of building business partnerships with differentiation patterns based on product/service specifications. In addition, Pondokdadap CFP managers can create a website for marketing household-scale fishery products. These products should be processed, considering household consumers are final consumers and prefer practical, ready-for-consumption products. A study by Marhaeni & Rahman (2018) showed that online sales platforms help connect sellers and buyers. Therefore, developing the marine fish sales platform will further expand the market reach and improve the CFP's performance.

Develop and build functional and supporting facilities, including docking facilities, at CFP Pondokdadap, to attract investors. The establishment of functional and supporting facilities expands job opportunities, economic growth and creates community welfare. Therefore, the Government is encouraged to build ship docking to enable actors or ship owners to repair ships at CFP Pondokdadap. Having ship repairs carried out at CFP Pondokdadap will generate a circulation of money that will improve the welfare of other relevant stakeholders. The workshop business can also serve as a source of non-tax state revenue (PNBP) which can be used for further development. Kusdiantoro *et al*. (2019) believe the fisheries sector has a crucial role in developing fisheries. The existence of regional autonomy encourages the contribution of regional governments through local and foreign investment.

They are improving the quality of human resources, apparatus, and fishing communities at CFP Pondokdadap

by organizing courses and training programs. Non-formal education systems, for instance, courses and training programs, have the capacity to the ability of CFP's employees. The Government is encouraged to establish course facilities, training institutions, research groups, community centres, meetings, and similar educational units to develop personal and group skills. A report by Buchari & Basri (2015) showed that human resources development in port is significantly dependent on Maritime Education. Well-trained and reliable human resources must also manage a great port.

CONCLUSIONS AND RECOMMENDATION

Conclusion

The utilization rates of several primary and functional facilities at CFP Pondokdadap were discovered to be 186%, 38%, 71%, 56%, 86%, and 97%, for the area of the port pool, the length of the pier is, the area of the FAP, the reservoir volume, the volume of fuel/diesel tanks and the parking area, respectively. Based on this study's findings, there are several suitable strategies for the Government to implement in developing CFP Pondokdadap, including: (1). Strengthening fisheries competitiveness through inspection of catches and checking fish quality from the handling process onboard to the distribution process and increasing the availability of Hygienic FAP facilities; (2). Optimizing Sempu Island as a natural breakwater for fisheries, including aquaculture (floating cages); (3). Developing a fishery information system, especially in implementing online fish marketing within the port area; (4). They were developing and constructing functional and supporting facilities at CFP Pondokdadap, especially docking facilities; (5) and improving the quality of human resources, apparatus, and fishing communities at CFP Pondokdadap by providing courses and training programs.

Recommendation

The Coastal Fishing Port Pondokdadap is directed to identify the required unavailable port and construct facilities. PPP Pondokdadap also ought to divide several areas or zoning of port facilities among managers in each zone to maximize the management of port facilities. However, further studies are required to develop a strategy for increasing the fishing port's contribution to the regional economy, especially in East Java.

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REFERENCES

Adly, E. 2013. Analisis kinerja ruang parkir di Pelabuhan Ferry International Batam Center. Jurnal Ilmiah Semesta Teknika. 16 (2): 98-107. https://doi.org/10.18196/st.v16i2.4893.

Ahsan, M., A. Umar & Y.A. Fachrudin. 2019. Review on the investment evaluation Of the Departement of Maritime Affairs And Fisheries Asset (Cold Storage) at Parigi Moutong Regency, Central Sulawesi, Indonesia. Russian Journal of Agricultural and Socio-Economic Sciences (RJOAS). 2 (86): 62-71. http://dx.doi.org/10.18551/rjoas.2019-02.09

Alleway, H.K., C.L. Gillies. M.J. Bishop, R.R. Gentry. S.J.Theuerkauf & R. Jones. 2019. The ecosystem services of marine aquaculture: Valuing benefits to nature and people. BioScience. 69 (1): 59-68. https://doi.org/10.1093/biosci/biy137

Buchari, E & H. Basri. 2015. The importance of human resources development and its impact in increasing of national port productivity. Procedia Engineering. 125: 519-525. https://doi.org/10.1016/j.proeng.2015.11.049

CFP Pondokdadap. 2021. Evaluasi PIPP PPP Pondokdadap Bulan April 2021 (Infopondokdadap.com).

Emhas, B. Ms-R. 2019. Analisis Tingkat Pemanfaatan Fasilitas Pelabuhan Perikanan Nusantara (PPN) Brondong, Kabupaten Lamongan, Jawa Timur. Thesis. Universitas Brawijaya. http://repository.ub.ac.id/id/eprint/170523

Firdaus, M. 2018. Profil perikanan tuna dan cakalang di Indonesia. Buletin Ilmiah Marina. 4 (1):23-32. http://dx.doi.org/10.15578/marina.v4i1.7328

Hansani, M.R., D. Suprapto & D. Wijayanto. 2020. Presepsi nelayan terhadap tempat pemasaran ikan higienis di PPS Cilacap. Jurnal Sosek KP. 15 (1):121-134. http://dx.doi.org/10.15578/jsekp.v15i1.7919

Irawati, R & S.W. Hati. 2015. Survey kepuasan pelanggan pelabuhan penyeberangan domestik telaga punggur. PROSIDING SEMINAR NASIONAL FORUM IN RESEARCH, SCIENCE, AND TECHNOLOGY. Politeknik Negeri Sriwijaya. http://eprints.polsri.ac.id/id/eprint/2544

Kriyantono, R. 2006. Teknik Praktis Riset Komunikasi. Kencana Prenada Media Group. Jakarta. http://ucs.sulsellib.net//index.php?p=show_detail&id=54009

Kusdiantoro., A. Fahrudin. S.H. Wisudo & B. Juanda. 2019. Kinerja pembangunan perikanan tangkap di Indonesia. Jurnal Buletin Ilmiah Marina. 5 (2): 69-84. http://dx.doi.org/10.15578/marina.v5i2.8053

Lubis, E. 2000. Pengantar Pelabuhan Perikanan. Fakultas Perikanan dan Ilmu Kelautan. IPB. Bogor.

Lubis, E & A.B. Pane. 2012. An optimum model of fish auction in Indonesian fishing ports in accordance with the characteristics of fisherman. Journal of Coastal Development. Journal of Coastal Development. 15 (3): 282-296.

Lubis, E & A.B. Pane. 2017. Institutional model of fish auction refunctionalization in Indonesia fishing ports. AACL Bioflux. 10 (6): 1456 -1465.

Marhaeni & A.H. Rahman. 2018. Membangun sistem penjualan ikan laut berbasis web pada CV. Famashena. Jurnal Rekayasa Informasi. 7 (1): 59-67.

Nurani, T.W., S.H. Wisudo. P.I. Wahyuningrum & R.E. Arhatin. 2014. Model pengembangan rumpon sebagai alat bantu dalam pemanfaatan sumberdaya ikan tuna secara berkelanjutan. Jurnal Ilmu Pertanian Indonesia. 19 (10): 57-65.

Rangkuti, A.S., B.H. Iskandar. K. Kirbandoko & D.C. Soeboer.

2018. Alternatif Strategi Pengembangan Pelabuhan Kuala Tanjung – Sumatera Utara. ALBACORE. 2 (2): 229-238. https://doi.org/10.29244/core.2.2.229-238

Reza, M., T. W. Nurani dan I. Solihin. 2019. Strategi pemenuhan kebutuhan industri pengolahan ikan di Pelabuhan Perikanan Samudera Belawan. Jurnal teknologi Perikanan dan Kelautan. 10 (2): 123-134. https://doi.org/10.24319/jtpk.10.123-134

Septaria, E. 2015. The Utilization of Fish Landing Port For Fishing Fleet/Fish Transporting Fleet Based on Fishery Law. International Journal of Business, Economics and Law. 7 (4): 62-67.

Sugiyono. S. 2010. Metode Penelitian Kuantitatif Kualitatif & RND. Alfabeta, Bandung.

Suherman, A. 2007. Rekayasa model pengembangan pelabuhan perikanan samudera cilacap. Disertasi. Bogor: Program Pascasarjana, Institut Pertanian Bogor.

Suherman, A. 2010. Alternatif strategi pengembangan Pelabuhan Perikanan Nusantara Brondong Lamongan Jawa Timur. Jurnal Saintek Perikanan. 5 (2): 65-72. https://doi.org/10.14710/ijfst.5.2.88-97

Suherman, A. 2011. Formulasi strategi pengembangan Pelabuhan Perikanan Nusantara Pengambengan Jembrana. Marine Fisheries. 2 (1): 87-99. https://doi.org/10.29244/jmf.2.1.87-99

Suherman, A & A. Dault. 2009. Dampak sosial ekonomi pembangunan dan pengembangan pelabuhan perikanan nusantara (PPN) Pengambengan Jembrana Bali. Jurnal Saintek Perikanan. 4 (2): 24-32. https://doi.org/10.14710/ijfst.4.2.24-32

Suherman, A., F. Kurohman & B.B. Jayanto. 2020. Kinerja operasional Pelabuhan Perikanan Nusantara (PPN) Palabuhanratu Sukabumi, Jawa Barat. Jurnal Perikanan dan Kelautan. 10 (1): 87-101.

Suherman, A., H. Boesono, F. Kurohman & A.K. Mudzakir. 2020[a]. Kinerja Pelabuhan Perikanan Nusantara Pengambengan Jembrana, Bali. Saintek Perikanan. 16 (2): 123-131. https://doi.org/10.14710/ijfst.16.2.123-131

Suherman, A., H. Boesono, F. Kurohman & A.K. Mudzakir. 2020[b]. Kinerja Pelabuhan Perikanan Nusntara Kejawanan Cirebon Jawa Barat. Marine Fisheries. 11 (1): 23-38. https://doi.org/10.29244/jmf.v11i1.31803

Suherman, A., H. Boesono, F. Kurohman & A.K. Mudzakir. 2020[c]. Kinerja Pelabuhan Perikanan Nusantara Karangantu- Banten, Indonesia. Jurnal Ilmu-Ilmu Perairan, Pesisir, dan Perikanan. 9 (2): 344-355. https://doi.org/10.13170/depik.9.2.17457

Suryono. S., R. Azizah. E.W. Kushartono. R. Ario & G. Handoyo. 2017. Analisis kelayakan investasi pada budidaya karamba jala apung ikan kerapu di Kepulauan Karimunjawa Kabupaten Jepara. Buletin Oseanografi Marina. 6 (2): 94-101. https://doi.org/10.14710/buloma.v6i2.16558

Sutrini, A., R. Rizwan & O. Kandi. 2018. Identifikasi fasilitas fungsional Pelabuhan Perikanan Nusantara Kota Sibolga, Provinsi Sumatera Utara. Jurnal Ilmiah Mahasiswa Kelautan dan Perikanan Unsyiah. 3 (2): 25-33.

Wijayanto, D., M.N. Huda & R. Yanuartoro. 2014. Studi Kelayakan Usaha Perikanan Tangkap Pancing Ulur dengan Fishing Based di CFP Pondokdadap Kabupaten Malang. Prosiding Seminar Nasional Tahunan Ke IV Jilid 2. FPIK Undip. 17-28. http://eprints.undip.ac.id/60521/

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