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The Strategic Management Analysis of Fish Auction Facilities in Bantul District

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Abstract

This study aims to develop the appropriate management strategies so that the *Tempat Pelelangan Ikan* (TPI) or fish auction facilities in Bantul District can contribute optimally in supporting capture fisheries activities. The analytical method used was AWOT by Expert Choice 11 software. Respondents consisted of 5 fishermen, 5 fish traders, 5 TPI employees, 2 government employees, 1 fishery instructor, and 1 academic. The results of this study indicate that the alternative of TPI management strategies in Bantul District based on their hierarchies were (1) infrastructure development (0,430); (2) human resources and TPI management development (0,230); (3) disaster mitigation / occupational health and safety (0.185); and (4) regulatory enforcement (0.156). It is necessary to improve the quality of TPI services both in terms of facilities and infrastructure and the services of TPI employees to increase the satisfaction of TPI service users so that more fishers like to land fish in the TPI and the catch fish production level will increase.

Keywords: AWOT; Fish Auction; Strategic; Management; Bantul District

INTRODUCTION

Bantul District is one of the districts in the Daerah Istimewa Yogyakarta (DIY) which has an area of 506.85 km^2 and has a coastline length of 17 km. Bantul District is directly adjacent to the waters of the Indian Ocean, which is a 573 Fisheries Management Area. Bantul District has a population of 981,164 people out of 1,824,729 inhabitants throughout the Province of DIY. The number of Fisheries Households in Bantul District in 2015 was 481 out of 1979 overall in DIY province, and the number of marine fishermen was 665 people, out of 3,126 fishermen as a whole in DIY Province[1].

The geographical location of the strategic district of Bantul is not comparable to the condition of existing capture fisheries. Bantul District only has class D fishing ports, namely *Pangkalan Pendaratan Ikan* (PPI) or Fish Landing Base, with fish auction facilities (TPI) at each PPI. The number of TPIs owned by PPI are 5 active TPIs and 1 inactive TPI. The existence of cooperative as a means of supporting fishermen activities was also only found in TPI Depok, while in other 4 TPI it was not operating.

On the other hand, the achievement of capture fisheries production in Bantul District in 2015 amounted to 391.80 tons was the lowest compared to the other two districts in DIY Province which were both directly adjacent to the Indian Ocean, which amounted to 422.50 tons in Kulon Progo District, and 3,103.30 tons in Gunungkidul District. Fisherman productivity in Bantul District was also the lowest compared to the other two districts, namely in 2015 the average production per fisherman per year was 0.589 tons, lower than the other two provinces in DIY, which was 0.771 tons per fisherman per year in Kulon Progo District and 1,622 tons per fisherman per year in Gunungkidul District[1].

Considering the existence of TPI as one of the functional facilities of fishery ports that support capture fisheries activities (Per.08/MEN/2012 concerning Fisheries Ports), after being one of the factors that increase the business and welfare of fishermen[2], it is very necessary conducted studies related to capture fisheries management and fish auction facilities (TPI). In the scope of coastal areas, DIY is one southern coastal area with Central Java Province, where until now studies on capture fisheries management and TPI are mostly carried out in Central Java Province, while in DIY Province is still rarely done. With the 2017-2022 DIY Governor's vision of "Welcoming the Age of the Indian Ocean for the Glory of Jogja's Human Dignity", the development of the DIY coastal area will be a development priority. The fisheries sector will continue to be developed by the government in DIY Province, one of them in the field of capture fisheries, so it is very necessary to study the management of capture fisheries and TPI, in order to contribute optimally in supporting capture fisheries production and the welfare of fishermen.

The appropriate TPI management strategy needs to be formulated so that the strengths and opportunities of TPI in Bantul District can be maximized, but simultaneously the weaknesses and threats that may exist can be minimized. This is expected to provide input to stakeholders to advance capture fisheries in Bantul District and DIY Province, in terms of TPI management in supporting fishermen's welfare and capture fisheries production in the DIY Province.

MATERIAL AND METHODS

Location and Time of Research

The locations of this study were at 5 TPI in Bantul District, namely Depok TPI, Samas TPI, Patihan TPI, Kuwaru TPI, and Pantai Baru TPI. This research was conducted in May-September 2018.

Types and Data Collection Methods

The type of data used in this study was primary data, obtained from the results of interviews with respondents. Primary data taken was data related to the management of TPI, including data related to the implementation of the organization's main tasks, and the potential which was the strength of the organization, weaknesses, threats faced by the organization, and opportunities that can be developed from the organization. The sampling method used was purposive sampling, which was done by taking data from selected people according to the criteria of the researcher. The criteria determined by the researcher were the key respondents who were related to the management of TPI. The respondents included (1) 5 TPI chairmen; (2) 5 chief fishermen; (3) 5 fish traders/buyers of catches; (4) 2 government employees; (5) 1 fishery extension staff; and (6) 1 academic.

Analysis Method

The analytical method used was AWOT, which is a combination of analysis of the Analytical Hierarchy Process (AHP) and SWOT (Strengths, Weaknesses, Opportunities, Threats). This merger was carried out because SWOT analysis has many weaknesses, such as too qualitative if it is quantified and it is not clear what the weight is between the factors of each component. Likewise with the weight between the factors of each component, priority needs to be made so that in determining which strategies are prioritized it will be easier to use SWOT and AHP[3]. The hierarchical structure of AWOT approach for making TPI management strategy plans can be showed in Figure 1. Data processing in the SWOT method used Expert Choice 11 software to measure consistency values and priority vectors of hierarchical elements.

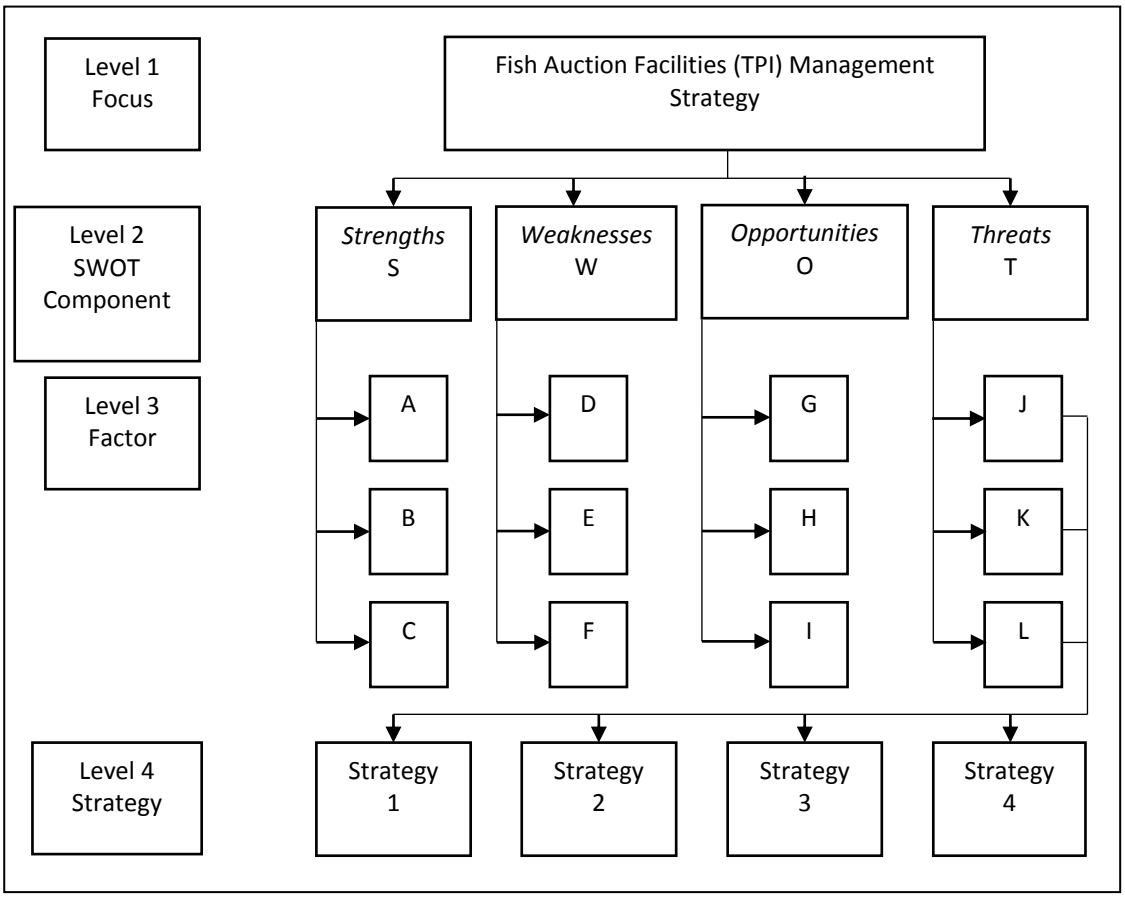

Figure 1. Hierarchical Structure for Making TPI Management Strategy Plans[3]

RESULTS AND DISCUSSIONS

Results

The results of the SWOT identification according to the conditions that occurred in five TPI in Bantul District obtained several internal and external TPI factors, such as those presented in Table 1. Internal factors are factors that can influence the continuity of TPI in Bantul District. This factor consists of strengths that support TPI activities and weakness factors that are contrary to previous factors. External factors are external factors which can also have an impact on TPI activities in Bantul District. This factor consists of opportunities and threats that may arise in the process of developing TPI.

From the results of the identification of several internal and external factors, they are then compiled into the SWOT matrix, then the formulation of alternative strategies is most suitable for the conditions in the field. Management strategies are formulated by utilizing strengths and opportunities and overcoming weaknesses and minimizing possible threats. The TPI management strategy in Bantul District was presented in the SWOT matrix in Table 1.

Table 1. SWOT Matrix

IFE / **EFE**	***Strengths (S)***	***Weaknesses (W)***
	1. TPI chairmen's work experience 2. Good relations between TPI employees 3. Good service performance 4. Has the main facilities in the form of a good TPI building 5. There was an area for Port development	1. The quality of TPI human resources was lacking 2. The lack of understanding of the main tasks of the organization 3. The auction system (price determined by TPI) 4. The low productivity of catches 5. The cold fish chains and TPI cleanliness were still lacking
Opportunities (O) 1. Demand for fish in markets was high 2. There was government support 3. Good road access and strategic geographical position 4. In the coastal tourism area 5. Abundant fish resources	**Strategy $S_{1,2,3,4}O_{1,2,3,5}$** Infrastructure Development (Utilizing government support to develop TPI, building facilities to facilitate landing of ships, computerization in terms of recording, cold storage, maximizing existing main facilities for improving TPI services and functions)	**Strategy $W_{1,2,5}O_{1,2,4,5}$** HR Development and TPI Management (Increasing the role of managers in running TPI in accordance with the aims and objectives of TPI, improving the quality of human resources with counseling and comparative studies, improving service quality by maintaining good relations with fishermen, increasing the role of existing fishermen cooperatives and establishing fishing cooperatives in TPI that have not had)
Threats (T) 1. Security of waves and bad weather due to global warming 2. Seasonal fish and fishing ground are getting farther away 3. The technology of catching local fishermen is less developed 4. The development of other ports in DIY is more rapid 5. The phenomenon of fish transactions outside of TPI	**Strategy $S_{1,5}T_{1,2,3}$** Disaster Mitigation / Occupational Health and Safety (Providing information and guidance to TPI managers and fishermen regarding sea security and the development of fishing technology, providing K3 and GPS / fish finder facilities by the government, making the TPI building provisions a minimum of 200 m from the shoreline to prevent wave threats)	**Strategy $W_{1,2,3,4}T_{4,5}$** Regulatory enforcement (Coordinating with relevant stakeholders for law enforcement, increasing price stability by coordinating between TPI to eliminate transactions outside of TPI)

The AHP values for the TPI strength factors of 19 respondents for the five sub-factors listed in Table 2. The highest sub-factor of the TPI strength factors was good relations among TPI employees with a value of 0.257, good service performance with a value of 0.234, and the presence of main facilities in the form of a good TPI building with a value of 0.221. The sub-factor of TPI's head work experience has a value of 0.183, and the existence of land for port development has the lowest value of 0.106. The combined consistency ratio was 0.00991.

Table 2. Identification of Strength Factors with AWOT

Strength	AHP Value
TPI chairmen's work experience	0,183
Good relations among TPI employees	0,257
Good service performance	0,234
Has the main facilities in the form of a good TPI building	0,221
There was an area for port development	0,106

Consistency Ratio : 0.00991

The AHP values for TPI weakness factors from 19 respondents for the five sub-factors listed in Table 3. The highest sub-factors of the TPI weakness factors were the poor quality of TPI human resources (HR) (0.292) and lack of understanding of the organization's main tasks (0.231). Low productivity of catches (0.168), lack of cold chain and cleanliness in TPI (0.170), and TPI auction system with a predetermined price (0.139) have a low value. The combined consistency ratio was 0.03.

Table 3. Identification of Weakness Factors with AWOT

Weakness	AHP Value
The quality of TPI human resources was lacking	0,292
The lack of understanding of the main tasks of the organization	0,231
The auction system (price determined by TPI)	0,139
The low productivity of catches	0,168
Cold fish chains and TPI cleanliness were still lacking	0,170

Consistency Ratio : 0.03

The AHP values for the TPI opportunity factors of 19 respondents for the five sub-factors listed in Table 4. The highest sub-factor of the TPI opportunity factors was the

high demand for fish in the market, with a value of 0.335. Abundant fish resource sub-factor (0.183), and the existence of government support (0.177) has a lower value. The lowest value was the sub-factor in the coastal tourism area with a value of 0.144, and good road access and a strategic geographical position of TPI with a value of 0.140. The combined consistency ratio was 0.00557.

Table 4. Identification of Opportunity Factors with AWOT

Opportunity	AHP Value
Demand for fish in markets were high	0,335
There was government support	0,177
Good road access and strategic geographical position	0,140
In the coastal tourism area	0,144
Abundant fish resources	0,203

Consistency Ratio : 0.00557

The AHP values for TPI threat factors from 19 respondents for five sub-factors were listed in Table 5. The highest sub-factors of the TPI threat factor were seasonally caught fishes with the farther fishing ground, which was 0.335, and wave security and bad weather due to global warming with a value of 0.286. Sub fisheries technology sub-factors that were less developed have a value of 0.198, the existence of fish transactions conducted outside TPI has a value of 0.121, and the development of other ports in DIY which has the smallest value of 0.074. The combined consistency ratio was 0.01.

Table 5. Identification of Threat Factors with AWOT

Threats	AHP Value
The security of waves and bad weather due to global warming	0,286
Seasonal fish and fishing ground were getting farther away	0,322
The technology of catching used by local fishermen was less developed	0,198
The development of other ports in DIY was more rapid	0,074
The phenomenon of fish transactions outside of TPI	0,121

Consistency Ratio : 0.01

AHP values for TPI management strategies from 19 respondents for five sub-factors were listed in Table 6. From the results of AHP analysis, the priority order of

alternative TPI management strategies in Bantul district were (1) human resources and TPI management development (0.430); (2) infrastructure development (0,230); (3) disaster mitigation/occupational health and safety (0.185); and (4) regulatory enforcement (0.156). The combined consistency ratio was 0.00825.

Table 6. Management Strategy Priorities with AWOT

Management Strategy	AHP Value
Infrastructure development	0,230
The development of TPI human resources and TPI management	0,430
Disaster mitigation	0,185
Regulatory enforcement	0,156

Consistency Ratio : 0.0082

The combined consistency ratio of 19 respondents for AHP value factors of strength, weakness, opportunity, threat, and TPI management strategies were all below 0.1. This showed that the value of the comparison between factors carried out by the combined respondents was consistent or that the results of the assessment were considered to fulfill the inconsistency requirements, because according to Saaty and Vargas (2012) and Falatehan (2016), the limit of consistency ratio in AHP analysis should not exceed 0.1 .

DISCUSSIONS

When observed on the component strength factors (Table 2.), it turned out that good relations among TPI employees, good performance of TPI services, and the existence of main facilities in the form of good TPI buildings were the top priorities. The strength factor must be maintained and improved in the management of TPI in Bantul District, in order to give satisfaction to the fishermen and fish traders, so that it is expected that more fishermen will bring ashore the fish in the TPI.

According to Muninggar et al.[4] and Sabana et al.[5], service quality has an effect on the level of satisfaction of TPI customers, namely fishermen and fish traders who carry out the sale and purchase of fish caught in TPI. The better the quality of service, the more fishermen like to land their fish catches in the TPI, so that the rate of catching fish production will increase. Sabana et al.[5] also added that facilities and infrastructure were also very important things in supporting TPI services. The condition of good facilities and infrastructure will attract the interest of fishermen to land the fish at the TPI.

The working experience of the TPI chairmen and the existence of area for port development were not the main priority of the strength factor, however, the good

work experience of the chairmen of TPI can support the management of TPI to be even better. The area for port development in Bantul District was constrained by the high waves of the coast and was a sandy beach. This condition was not suitable for port development[6].

If observed from the weakness component factors (Table 3.), it turned out that the low quality of TPI human resources and the lacks of understanding the main tasks of the organization were the highest weakness factor in TPI in Bantul District. This problem also exists in the research of Widayati[7], Setiarso[8] and Maulidya[9]. This factor was one of the main weaknesses that are common within TPI's internal. In order for TPI to run well in supporting capture fisheries activities, then TPI should be run by people with good human resources, and understanding the main tasks of their organization.

The lack of cold chain and cleanliness in TPI (0.170), low productivity of catches (0.168), and TPI auction system with predetermined prices (0.139), ranked third to fifth from TPI weakness factors. The lack of cold chain and cleanliness in TPI was one of TPI's weaknesses, including the unavailability of cold storage and the lack of maintenance of the cleanliness in the TPI area. The low productivity of TPI catches was also a weakness of TPI in Bantul District[1]. One of the low productivity of catch was influenced by marine capture fisheries which are complementary to basic livelihoods, namely agriculture and tourism, as well as the threat of high waves and seasonal fisheries[10].

The high demand for fish in the markets was the highest opportunity of TPI in Bantul District (Table 4.). The fulfillment of the needs of marine fish was still largely covered by suppliers outside the region, especially from the north coast. This was one of the main reasons for developing capture fisheries in Bantul District. Abundant fish resource factors (0.183), government support (0.177), located in coastal tourism areas (0.144), and good road access and strategic TPI geographical position (0.140) were the next priority opportunities that can be used as a support for TPI management strategies.

Seasonally caught fish with the increasingly distant fishing ground was the biggest threat to the sustainability of TPI (Table 5.). In general, fishing patterns by fishermen on the southern coast of Yogyakarta, make their respective coastal areas as daily fishing ground areas. This was because with a 3 GT fiber outboard motor boat with one-day fishing, it was more effective and efficient[11]. The roaming area or the range of fishermen in Bantul District was narrow, it cannot reach the further fishing ground. Nahib and Sutrisno[11] also added that fishermen on the southern coast of Yogyakarta rely on prey institutions to determine the season of fish. With gillnet fishing equipment and fishing rods, generally, local fishermen in Bantul District only sail between September and February. The gap between the months was used entirely for farming, tourism activities, or fish farming. This was because the fishing profession in Bantul District was a side profession of basic livelihoods, namely agriculture and tourism[10].

The security of waves and bad weather due to global warming were also a major threat factor for the sustainability of TPI. The season of fishing in Bantul District

which limits fish catches every year, coupled with waves and bad weather due to global warming caused the catching fish production to be erratic. Even in the sailing season, if the wave conditions or the weather were bad, fishermen will usually be reluctant to go to sea. The south coast itself was famous for its high waves.

The factor of the fishing technology used by local fishermen that were less developed (0.198) was also one of the factors threatening the sustainability of TPI. As well as factors in fish season and wave and weather security, technological factors also limit the amount of catch fish production. The existence of fish transactions conducted outside of TPI (0.121) was the next threat, and the development of other ports in DIY which is more rapid has the smallest threat value with a value of 0.074.

In Table 6., the development of human resources and TPI management ranks first in the priority scale of alternative TPI management strategies in Bantul District. The strategy of developing TPI's human resources and management in this analysis was to improve the role of managers in running TPI in accordance with the aims and objectives of TPI, improve the quality of human resources with counseling and comparative studies, improve service quality by maintaining good relationships with fishermen, increasing the role of fishermen cooperatives and also formed the fishing cooperatives in TPI that do not yet have, where for now the existence of active fishing cooperatives only found in TPI Depok, while in other TPI there were no active cooperatives.

According to Sutrisno[12], human resources development was seen as improving the quality of human resources through training and education programs. Training helps employees to understand a practical knowledge and its application, in order to improve the skills, proficiencies, and attitudes needed by the organization in an effort to achieve goals. Education is an activity to improve the mastery of theory and the skills to decide on issues related to activities to achieve goals. Human resources development aims to improve the skills and professionalism of employees in carrying out their duties and functions optimally so that in carrying out their duties they can be more efficient and productive.

According to Diana[13], human resources management activities will run smoothly when utilizing management functions, including planning, organizing, directing, controlling, procuring, developing, compensating, integrating, maintaining, disciplining, and terminating. In terms of this analysis, development is very important, namely the process of improving employee technical, theoretical, conceptual, and moral skills through education and training. Control was also very important, namely the activity of controlling employees to comply with organizational rules and work according to plan. If there were deviations or errors, corrective actions and/or improvements are made. Control of TPI employees includes attendance, discipline, cooperative behavior and maintaining the work environment situation. Compensation was also important because providing compensation for TPI employee services must be fair and feasible, so that its performance becomes better.

TPI's infrastructure development ranks second on the priority scale of alternative TPI management strategies in Bantul District. TPI's infrastructure development strategy in

this analysis was utilizing government support to develop TPI, building facilities to facilitate ship landing, computerization in terms of recording, cold storage, and maximizing existing main facilities to improve TPI services and functions.

Infrastructure greatly influences the smooth performance of TPI and TPI services. In terms of facilities and infrastructure, the condition of clean, neat and orderly facilities and infrastructure can provide comfort to the recipient of the service. The guaranteed level of environmental security of the service unit or facilities and infrastructure used, makes customers feel calm to get services to the risks resulting from the implementation of services. Adequate facilities and infrastructure such as the area and length of the pier, auction site, electricity capacity, parking area, and the existence of rest area for fishermen, can also maximize the level of customer satisfaction or service users of TPI. The condition of good facilities and infrastructure will be able to attract the interest of fishermen to land fish on the TPI[5].

For now, observed from the condition of the TPI main building, TPI Kuwaru was the TPI that needs the most attention. The distance of the main building from the shoreline was less than 50 meters, with poorly maintained conditions, and minimal facilities. In terms of recording, the new Depok and TPI Patihan TPIs have been supported by computers, while in the other 3 TPI they are still manual. Even in Samas TPI and Pantai Baru TPI, there were no production data found in previous years. A computerized system is needed for all TPIs to improve and facilitate data collection at TPI Bantul. In terms of the cold chain, there is currently no cold storage in all TPI in Bantul District.

For TPI as a whole in Bantul District, it needs to be improved in terms of cleanliness and maintenance of existing facilities, as well as some facilities and infrastructure that are not yet available, including sanitation facilities and waste treatment facilities, ban boards for smoky vehicles and animals entering the TPI area, as well as the ban on smoking and spitting carelessly (Decree of the Minister of Marine and Fisheries of the Republic of Indonesia Number 52A / KEPMEN-KP / 2013 concerning the Requirements for the Quality and Safety of Fisheries Products in the Production, Processing and Distribution Process).

Disaster mitigation/health and safety occupies or *Kesehatan dan Keselamatan Kerja* (K3) the third place in the priority of alternative TPI management strategies in Bantul District. The strategy in terms of TPI disaster/health and safety mitigation in this analysis was to provide socialization and guidance to TPI managers and fishermen regarding sea security and the development of fishing technology, providing K3 facilities and GPS / fish finders by the government, and making minimum TPI building provisions 200 m from the beach to prevent the threat of waves.

Disaster mitigation/health and safety was very important for capture fisheries activities on the southern coast, especially on the coast of Bantul District. This was because the area has large wave characteristics, and in certain seasons at the end of May to the end of August large waves and strong winds often occur[10]. In terms of human resources, socialization and guidance to TPI managers and fishermen regarding fishing safety is very important to do. In terms of technology, facilities, and

infrastructure, the development of fishing technology, the provision of K3 facilities and GPS / fish finders are also very much needed in the context of disaster mitigation/health and safety. For the minimum TPI building requirements of 200 m from the shoreline, currently, the Kuwaru TPI was the most unsafe, because it is only less than 50 meters from the shoreline.

Regulatory enforcement ranks fourth on the priority scale of alternative TPI management strategies in Bantul District. The strategy in terms of enforcement of regulations in TPI in this analysis is to coordinate with relevant stakeholders for law enforcement and increase price stability by coordinating between TPI, which aims to eliminate transactions that occur outside of TPI. Currently, non-TPI transactions still occur in all TPIs in Bantul District, especially for low economic fish species such as *kuniran* (*Upeneus moluccensis*), catfish, and other mixed fish, while for fish species such as *bawal putih* (*Pampus argenteus*) and *layur* (*Trichiurus lepterus*) which have high economic value, the transactions were always carried out at TPI. In terms of fishermen, direct sales to tourists for low-economic fish were considered more profitable than sold through TPI. Such conditions need to be enforced so that all transactions carried out through TPI, but still do not ignore the losses that may be experienced by the fishermen. It needs good cooperation between all stakeholders, especially the government, TPI management, fishermen, and fish traders.

CONCLUSION

According to the results of the AWOT analysis obtained 4 alternatives TPI management strategies in Bantul district, in order of priority: 1) human resource and TPI management development, which consists of increasing managerial roles in running TPI in accordance with the aims and objectives of TPI, improving the quality of human resources with counseling and study appeal, increase the quality of services by maintaining good relations with fishermen, increasing the role of existing fishing cooperatives and establishing fishing cooperatives in TPI that do not yet have; 2) infrastructure development, namely utilizing government support to develop TPI, building facilities to facilitate ship landing, computerization in terms of recording, procurement of cold storage, maximizing existing main facilities for improving services and functions of TPI; 3) disaster mitigation / occupational health and safety, namely by providing socialization and guidance to TPI managers and fishermen regarding sea security and developments in fishing technology, provision of K3 facilities and GPS / fish finders, and making TPI building provisions at a minimum of 200 m from the shoreline to prevent wave threats; and 4) enforcement of regulations, namely coordinating with relevant stakeholders for law enforcement, increasing price stability by coordinating between TPI to eliminate transactions outside TPI.

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