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CAPABILITY IMPROVEMENT STRATEGY FASHARKAN MENTIGI TANJUNG UBAN TO SUPPORT INDONESIAN WARSHIP OPERATION IN SOUTH CHINA SEA

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ABSTRACT

To support the readiness of KRI elements operating in the North Natuna sea area, one of them is needed by Fasharkan Mentigi Tanjung Uban which functions as a KRI maintenance and repair unit. Capacity building is needed, of course, through appropriate and appropriate strategies. By adopting the technometric method, it is hoped that the technology component with the largest gap between Fasharkan Mentigi Tanjung Uban and Fasharkan Surabaya will be obtained. Furthermore, using the SWOT method, a strategy will be formed according to the technology components. Interpretive structure modeling (ISM) method is used to obtain priorities and the relationship between strategies. The results of the analysis show that the Humanware Technology Component has the largest gap value between Fasharkan Mentigi Tanjung Uban and Fasharkan Surabaya, with a gap value of 0.1474, while the Technoware component gap is 0.0838, the infoware technology component gap is 0.0125 and the Orgaware technology component gap is 0.0099. The SWOT analysis provides 11 (eleven) development strategies according to the Humanware component, and the ISM method has provided 5 (five) hierarchical levels for these strategies.

Keywords: *Technometry, SWOT, ISM, Fasharkan.*

1. INTRODUCTION

According to the 1982 UNCLOS international law of the sea, states are entitled to the sea, namely the territorial sea measured from the coastline as far as 12 miles, an additional zone of 24 miles and then there is an EEZ as far as 200 miles. (Marsetio, 2014). China claims its territory based on the nine-dash line, namely claims based on the historical area of the South China Sea covering an area of 2 million square km of which 90% of which China claims as its historical maritime rights, even though it is up to 2,000 km from mainland China. This results in the loss of Indonesian waters covering an area of approximately 83,000 km2 or 30 percent of the Indonesian sea area in Natuna. In addition, the sea area of other countries, such as the Philippines and Malaysia, has decreased by 80 percent, Vietnam by 50 percent, and Brunei by 90 percent.

Figure 1, Accident Data of the Indonesian Navy

And until now the conflict in the South China Sea has not yet been resolved, therefore the conflict in the South China Sea will become a conflict that cannot be resolved in the near future, it will even happen for decades to come if there is no agreement from each party. every country.

To be able to maintain Indonesia's sovereign territory in North Natuna, one of them is by presenting the KRI operating in Natuna. With the KRI operating in Natuna, a unit is needed that can carry out repairs in case of damage, the closest location to Natuna is Fasharkan Mentigi Tanjung Uban.

Fasharkan Mentigi Tanjung Uban is a type "A" Fasharkan, according to technical advice, it should have the ability to repair and maintain all types of KRIs up to the depot level. However, the current condition of Fasharkan Mentigi Tanjung Uban's ability is still limited in terms of implementing the repair and maintenance of the KRI, because there are several things that still need to be repaired and changed in the future, including the condition of existing human resources, both in terms of quality and quantity, which have not been met. limited human resources who have certification, so they have not been able to carry out repairs to the KRI up to the depot level. Docking capability is currently only able to carry out docking up to a capacity of 300 tons using Slipway Dock with conditions around 65%,

Technometric analysis is used as a tool to carry out audits on what factors have the largest gap in the 4 (four) technology component perspectives including Technoware, Humanware, Infoware and Orgaware between FasharkanMentigi Tanjung Ubanwith Fasharkan Surabaya. SWOT analysis is used as a strategy formulation to obtain alternative strategies from Internal and External factors that have the largest gap from the results of the Technometric analysis which then uses ISM which is used to determine the strategic priority scale. It is hoped that this method is able to provide development recommendations so that the right strategy stages can be obtained for increasing the ability of Fasharkan Mentigi Tanjung Uban. From the results of the selected strategic priorities, a Roadmap will be formulated within a period of 5 (five) years which will be used as a guide in developing the Fasharkan Mentigi Tanjung Uban in the future. From the results of this study, it is hoped that it can help provide advice and input to the leadership of the Indonesian Navy in the formulation of the Minimum Essential Force (MEF) in the future, especially in the development, development and rejuvenation of the Fasharkan Mentigi Tanjung Uban in the future.

2. MATERIAL AND METHODS

2.1 Technometric Method

In summary, the concept of technology relates to all knowledge, products, processes, methods, systems used to create a product or in the provision of services. (Project Technology Atlas, 1987) The Technology Atlas Team and the Asian Pacific Center of Transfer divide technology into:

a. *Technoware* (T), as object-embodied technology (physical facilities) consisting of technical equipment, consisting of production equipment.
b. *Humanware* (H), As person-embodied technology (human abilities) consisting of human resource capabilities.
c. *Infoware* (I), As document-embodied technology (documented facts) consisting of information tools.
d. *Orgaware* (O), As an institution embodied technology (organizational framework) consisting of organizational and regulatory tools.

Based on this approach the stages of technology measurement are as follows:

a. Estimate the level of sophistication of the technology components, each criterion given a score between 0 and 10. A score of 0 means the worst specification and a score of 10 is the best specification. Determine the degree of technological sophistication for each criterion, on the Lower Limit (LL) and Upper Limit (UL).
b. Assessment of the 'state of the art' components. State-of-the-Art (SOTA) is an effort to assess or evaluate the status of the four technology components in a production transformation process.

$$ST = \frac{1}{10}\left[\frac{\Sigma_k ti_k}{kt}\right] \quad \text{SOTA Technoware}$$

$$SH = \frac{1}{10}\left[\frac{\Sigma_l hl_l}{lh}\right] \quad \text{SOTA Humanware}$$

$$SI = \frac{1}{10}\left[\frac{\Sigma_m f_m}{mf}\right] \quad \text{SOTA Infoware}$$

$$SO = \frac{1}{10}\left[\frac{\Sigma_n O_n}{nO}\right] \quad \text{SOTA Orgaware}$$

c. Technology component contribution assessment

$$T_i = \frac{LT_i + ST_i(UT_i - LT_i)}{9}$$

$$H_j = \frac{LH_j + SH_j(UH_j - LH_j)}{9}$$

$$I = \frac{LI + SI(UI - LI)}{9}$$

$$O = \frac{LO + SO(UO - LO)}{9}$$

d. Determination of the intensity of the contribution of technology components using AHP
e. This approach aims to measure the combined contribution of the four technology components in a process of transforming inputs into outputs. The four components are combined into one so as to achieve the contribution of technology content from the transformation facility. The Technology Contribution Coefficient (TCC) can be formulated as follows:
TCC = $T^{\beta t} \times H^{\beta h} \times I^{\beta i} \times O^{\beta o}$

2.2 SWOT method

SWOT analysis includes efforts to identify strengths, weaknesses, opportunities and threats that determine the company's performance. External information about opportunities and threats can be obtained from many sources, including customers, government documents, suppliers, banking circles, partners in other companies. Strength and weakness factors exist in a company, while opportunities and threats are factorsor environmentn faced by the company concerned. If it can be said that the SWOT analysis is a powerful instrument in conducting strategic analysis, the efficacy lies in the ability of the company's strategy makers to maximize the role of strength factors and take advantage of opportunities so that they act as a tool to minimize the weaknesses contained in the company's body and reduce the impact of threats that arise. and have to face (Suharjo, 2008).

2.3 ISM (Interpretive Structural Modeling) Method

ISM is a methodology with the aim of identifying the relationship between items by defining the problem or related issue as well as an appropriate modeling technique in analyzing the relationship between one variable and another.

3. RESULT AND DISCUSSION

3.1 Degree of Sophistication

The degree of sophistication is measured at each Lower Limit (LL) and Upper Limit (UL) in each sub-criteria. The value of the degree of sophistication is between 1 – 9 according to each parameter. The following is the value of the degree of sophistication in Fasharkan Mentigi and Surabaya, which was obtained from questionnaires and interviews.

Table 1. Lower limit and upper limit Technoware

TECHNOWARE	MENTIGI		SURABAYA	
Fasilitas Harkan Platform	LL	UL	LL	UL
1 Fasiltas Harkan Sistem Pendorong	2	6	2	6
2 Fasiltas Harkan Sistem Bantu	2	6	2	7
3 Fasiltas Harkan Sistem Keselamatan	2	5	2	6
4 Fasiltas Harkan Bangunan Kapal	2	6	2	7
Fasilitas Harkan Sewaco	LL	UL	LL	UL
1 Fasiltas Harkan Sistem Komunikasi	2	5	2	6
2 Fasiltas Harkan Sistem Senjata	1	5	2	6
3 Fasiltas Harkan Sistem Navigasi	2	5	2	6

Table 2. Lower limit and upper limit Humanware

HUMANWARE	MENTIGI		SURABAYA	
Contact Humanware	LL	UL	LL	UL
1 Perwira Div. Plaform	3	5	4	8
2 Perwira Div. Sewaco	3	5	4	8
3 Operator Platform	3	7	3	7
4 Operator Sewaco	3	7	3	7
Support Humanware	LL	UL	LL	UL
1 Kepala Bagian Platform	3	7	3	8
2 Kepala Bagian Sewavo	3	7	3	8
3 Office staff	3	7	3	7

Table 3. Lower limit and upper limit Infoware

INFOWARE	Mentigi	Surabaya
Lower Limit (LL)	3	3
Upper Limit (UL)	6	6

Table 4. Lower limit and upper limit of Orgaware

ORGAWARE	Mentigi	Surabaya
Lower Limit (LL)	4	3
Upper Limit (UL)	6	6

3.2 State of the Art (SOTA)

Like the assessment of the degree of sophistication, the assessment of criteria or scores, is given to each sub-criteria with their respective parameters for each technology component. The criteria assessment ranges from 0 – 10, where the average value is the State of the art (SOTA) of the sub-criteria. On Figure 2.1, it can be seen the State of the art (SOTA) value of the Technoware technology component, where this component consists of two sub-components, namely the Harkan Platform Facility and the Harkan Sewaco Facility. This sub-component has several sub-components. The value of SOTA Technoware Fasharkan Mentigi has a smaller value when compared to the value of SOTA Technoware in Fasharkan Surabaya, for all sub-components of Technoware.

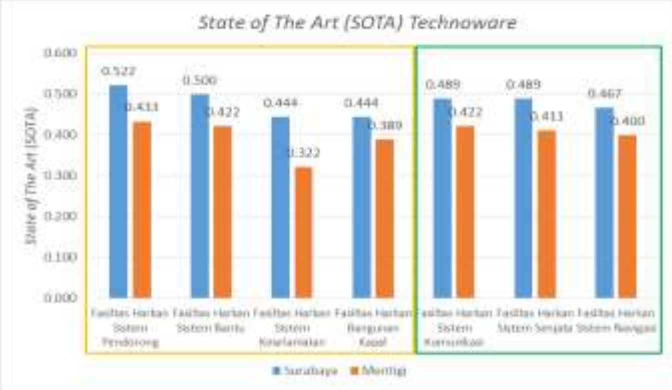

Figure 2. SOTA Technoware

The Humanware technology component is divided into two sub-components, namely Contact Humanware and Support Humanware. The largest difference in SOTA values is in the Humanware component, the Humanware contact sub-component, namely the Platform Division Officer, with a SOTA value of 0.767 at Fasharkan Surabaya, and 0.567 at Fasharkan Mentigi. Overall, the value of SOTA Humanware Fasharkan Mentigi is smaller than the value of SOTA Fasharkan Surabaya.

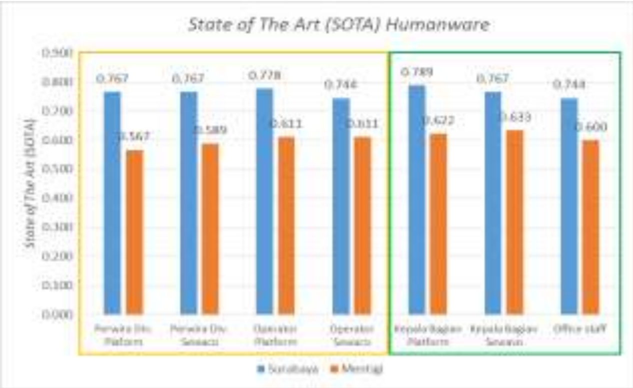

Figure 3. SOTA *Humanware*

Figure 4. SOTA *Infoware*

The Infoware Technology component consists of 3 (three) Sub-components, namely Infoware related to Technoware, Infoware related to Humanware, and Infoware related to Orgaware. As shown inFigure 4. SOTA 3, the value of SOTA Infoware on Fasharkan Mentigi has a higher value in some of its sub-components. In Infoware related to Technoware, Technoware Operation Information (IPT) on Fasharkan Mentigi is worth 0.617 while Fasharkan Surabaya is worth 0.567. as well as information on Technoware performance improvement (IPPT), the Fasharkan Mentigi is 0.583 while the Fasharkan Surabaya is 0.567. as well as the SOTA value on the Technoware Attribute Information (IAT) sub-components, where the Fasharkan Mentigi is worth 0.600, while the Fasharkan Surabaya is 0.567. This shows that, based on respondents' assessments, information about Technoware at Fasharkan Mentigi is easier to obtain than at Fasharkan Surabaya. On the other hand, Infoware is related to Humanware, and Infoware related to Orgaware on Fasharkan Mentigi has a lower SOTA value than Fasharkan Surabaya. This shows that the management of information at Fasharkan Surabaya related to Humanware and Orgaware is better than Fasharkan Mentigi.

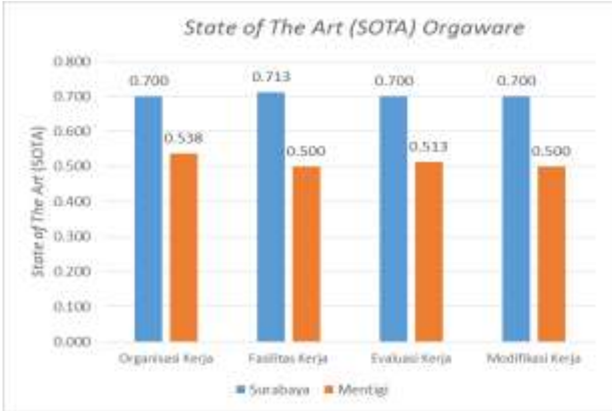

Figure 5. *SOTA Orgaware*

The SOTA value of the Orgaware technology component, which consists of 4 (four) sub-components, namely work organization, work facilities, work evaluation, and work modification. The SOTA value of these four sub-components at Fasharkan Mentigi has a lower value than the SOTA value at Fasharkan Surabaya. The largest difference is in the work facilities sub-component, where the SOTA value is 0.50 for Fasharkan Mentigi, and 0.713 for Fasharkan Surabaya.

3.3 Technology Component Contribution

To further calculate the value of the technology contribution of each sub-component with the equation below, where the value of LL and UL is the value of the degree of sophistication

$$contribution = \frac{1}{9}[LL + SOTA(UL - LL)]$$

It can be seen that the contribution value of the technology sub-components, both from Technoware, Humanware, infoware and Orgaware at Fasharkan Mentigi is worth less than in Fasharkan Surabaya. It can also be seen that the difference in the value of this contribution is the largest in the Humanware component.

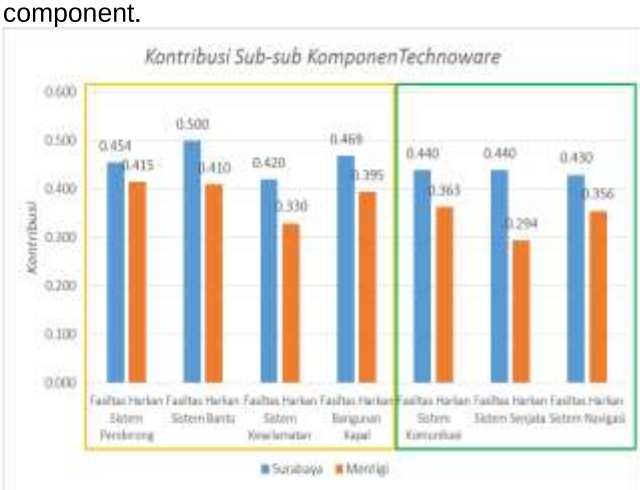

Figure 6. Column chart Technoware component contribution

The biggest contribution gap is in the Harkan Weapon System Facility, with a contribution value of 0.294 for Fasharkan Mentigi, while for Fasharkan Surabaya it will be 0.440, with a difference of 0.146. Next is the contribution value of the Auxiliary System Harkan Facility and the Safety System Harkan Facility, with the difference in the contribution value being 0.09.

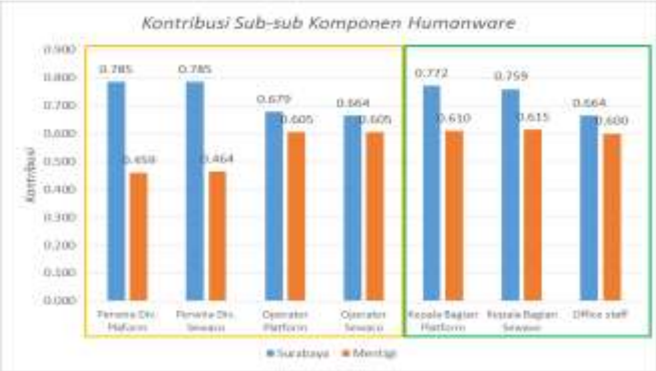

Figure 7. Column chart of component contributions Humanware

The contribution value to the Humanware component has a fairly large gap, especially in the sub-components of the Platform Division Officer and the Sewaco Division Officer, where these two sub-components are included in the Contact Humanware component. Seen onFigure 7. Column chart of component contributions 6 at Fasharkan Mentigi, the contribution of Periwa in the Platform Division was 0.459 while at Fasharkan Surabaya it was 0.785. Sewaco Division officers, have a contribution value of 0.464 to Fasharkan Mentigi and 0.785 to Fasharkan Surabaya. Overall, the value of Humanware's contribution to Fasharkan Mentigi is less than Humanware's contribution to Fasharkan Surabaya.

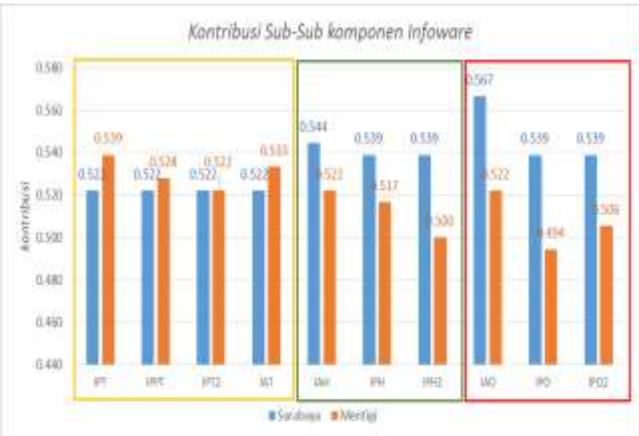

Figure 8. Column chart of component contributions Infoware

The contribution value of Fasharkan Mentigi has a greater value than Fasharkan Surabaya in several sub-components of the Infoware component. OnFigure 8. Column chart of component contributions 7 it can be seen that, the three sub-components of Fasharkan infoware have greater values than those of Fasharkan Surabaya, namely the sub-components of Technoware operation information (IPT), Technoware performance improvement information (IPPT) and the Technoware attribute information sub-component (IAT), with a value of Fasharkan Mentigi were 0.539, 0.528, and 0.533, respectively, while Fasharkan Surabaya were 0.522, 0.522 and 0.522, respectively.

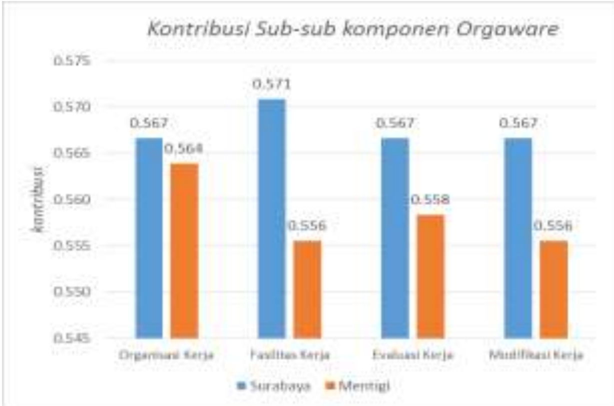

Figure 9. Column chart component contribution Orgaware

Overall, the contribution value of the Orgaware component to Fasharkan Mentigi is smaller than Fasharkan Surabaya. The contribution value with the largest difference lies in the work facilities sub-component, with a value of 0.556 for Fasharkan Mentigi, and 0.571 for Fasharkan Surabaya.

3.4 Analytical Hierarchy Process (AHP)

*Analytical Hierarchy Process (AHP)*is used to obtain the intensity value for the sub-components, wherein this intensity value is then used in the calculation of the Technology Contribution Coefficient (TCC) both at the sub-component level and at the Technology component level. The limitation on the use of AHP lies in the consistency ratio (CR) value where the acceptable value is CR<0.1.

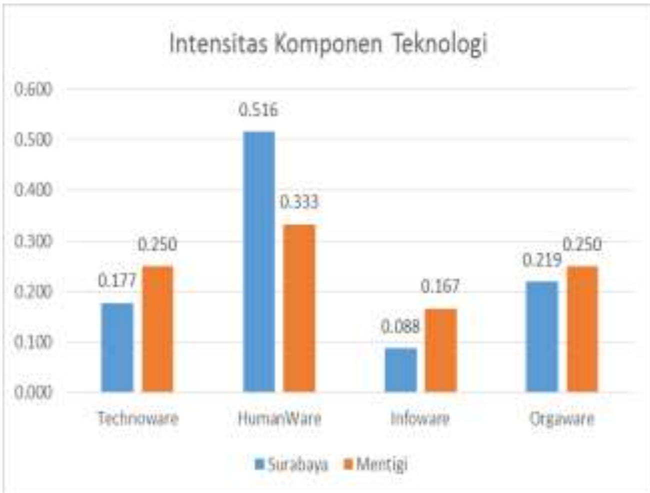

Figure 10. Intensity of Technological Components

From Figure 3.9 it can be seen that the highest intensity value is in the Humanware Technology Component, which is 0.516 at Fasharkan Surabaya, and 0.333 at Fasharkan Mentigi. While the smallest intensity value is the Infoware Technology Component, which is 0.088 at Fasharkan Surabaya and 0.167 at Fasharkan Mentigi. Henceforth, this intensity value is used in the calculation of the Technology Coefficient Contribution (TCC) both at the Sub-component stage, the component stage and the entire Technology Component stage.

3.5 Coefficient of Technology Contribution

The next step in the technometric method is the calculation of the contribution of the technology component in the form of the Technology Contribution Coefficient (TCC) value. TCC is calculated using the equation

$$TCC = T^{\beta T} H^{\beta H} I^{\beta I} O^{\beta O}$$

Where T, H, I, and O are the contribution values of each technology component, and T, H, I, O are the intensity values of each technology component.

Based on the calculation of the contribution value to the two Fasharkans, it can be seen that the Humanware Technology Component has the largest gap value. This is the basis for the development of further analysis, which is followed by a SWOT and ISM analysis with a focus on the Humanware technology component. Overall, the TCC value of Fasharkan Mentigi is 0.506 while the TCC value of Fasharkan Surabaya is 0.6149.

3.6 Gap Analysis

At this stage, the contribution to the Technology Component at Fasharkan Mentigi and Surabaya will be compared. By looking at the difference in the value of the largest Technology Component, it will be used as a Technology Component to be developed.

Table 5. Ranking of the Tech Component Contribution Gap

Technology Components	Contribution		gap	Ranking Gap
	Mentigi	Surabaya		
Technoware	0.3640	0.4479	0.0838	2
Humanware	0.5797	0.7271	0.1474	1
Infoware	0.5172	0.5297	0.0125	3
Orgaware	0.5583	0.5682	0.0099	4

From Table 3.5 it is shown that, between Fasharkan Mentigi and Fasharkan Surabaya there is a gap or difference in the contribution of the Technology Component, and the largest gap value is in the Humanware Technology Component.

3.7 SWOT Analysis

Table 6. SO and WO Strategi Strategies

X	No	SO Strategy	No	WO Strategy
Opportunity	Stgi.1	Fulfillment of supporting facilities and infrastructure used in the maintenance and repair process through increasing the budget	Stgi.5	Regular training for personnel, both technical and leadership training
	Stgi.2	Fulfillment of Personnel according to DSP at Fasharkan Mentigi	Stgi.6	Availability of personnel with appropriate quality and technical certification
	Stgi.3	There is active collaboration with injasmar (maritime service industry) in relation to the function of Fasharkan	Stgi.7	Quality management system training in accordance with ISO 9000 and its certification package
	Stgi.4	Cooperation with educational institutions in improving maintenance and repair methods	Stgi.8	Increased knowledge of personnel through ToT with other educational institutions.

Table 7. ST and WT Strategy

X	No	ST Strategy	No	WT Strategy
Threats	Stgi.9	Carry out repairs as optimally as possible with the help of local Injasmar	Stgi.11	Optimizing LK reporting
	Stgi.10	Meeting the needs of spare parts by collaborating with the surrounding Injasmar		

3.8 ISM method

Procedure for using the ISM Method

a. Parameter identification

The elements that must be considered for identification of relationships, obtained through surveys, and expert interviews.

b. Development of Structural Self Interaction Matrix (SSIM)

The development of an interpretive structural model begins with the preparation of an interaction matrix. The matrix is compiled based on the results of the questionnaire.

The relationship between parameters symbolized by

V : The relationship of the element Ei to Ej, not vice versa

A : The relationship of the element Ej to Ei, not vice versa

X : Interrelationship between Ei and Ej (can be vice versa)

O : Indicates that Ei and Ej are not related

To then be poured in the form of a matrix, as below

Table 8. Matrix VAXO questionnaire results

NO	Sub Strategi	ST1	ST2	ST3	ST4	ST5	ST6	ST7	ST8	ST9	ST10	ST11
ST1	improvement of facilities and infrastructure		V	V	V	V	V	V	V	V	V	0
ST2	Fulfillment of personnel according to DSP	A		V	V	V	V	V	V	V	0	0
ST3	Cooperation with Injasmar	A	A		0	X	0	X	0	X	X	0
ST4	Cooperation with educational institutions	A	A	0		0	0	0	X	0	0	0
ST5	Periodic technical and managerial training	A	A	X	0		X	X	X	V	0	0
ST6	Availability of personnel with appropriate quality	A	A	0	0	X		V	0	0	0	0
ST7	Quality management training and certification	A	A	X	0	X	A		X	V	X	0
ST8	Conducting ToT with educational institutions	A	A	0	X	X	0	X		X	0	0
ST9	Carry out repairs assisted by Injasmar	A	A	X	0	A	0	A	X		X	A
ST10	Meeting the needs of spare parts through collabo	A	0	X	0	0	0	X	0	X		A
ST11	Optimizing LK reporting	0	0	0	0	0	0	0	0	V	V	

c. Reachability Matrix

From the self-interaction matrix (SSIM), the relational indicators are converted into binary numbers 0 and 1 to get a square matrix, provided that:

1) If (i,j) the value in SSIM is V, (i,j) the value in the reachability matrix is 1, and the value (j,i) is 0.
2) If (i,j) the value in SSIM is A, (j,i) the value in the rechability matrix is 0, and the value of (i,j) is 1.
3) If (i,j) the value in SSIM is X, (i,j) the value in the reachability matrix is 1, and the value (j,i) is also 1.
4) If (i,j) the value in SSIM is O. (i,j) in the reachability matrix is 0, and the value (j,i) is also 0.

d. Partition Level

Each parameter is partitioned by Dependence and Driven values. Iteration is done by eliminating strategies that have a low level of driven, then iteration is carried out again until a strategy partition is arranged.

e. ISM Construction

From the partitioned parameters and reachability matrix, a structural model is derived, showing the parameters at each level.

f. MicMac Analysis

Micmac analysis is used to classify parameters/variables based on Driving Power and Dependence Power. There are 4 (four) classifications/categories of parameters/variables, namely as follows:

1) Autonomous Variable
Independent variables, do not have high driving power or high dependant power but are still an important part of the system
2) Variable linkage
This variable has medium importance because it has high driving power but also has high dependent power. This can be interpreted that the variable can drive the system but also depends on other variables
3) Dependent Variable.
This variable has low driving power and high dependent power. This variable is driven by the independent variable.
4) Independent Variable
Is the most important variable. This variable has high driving power and low dependent power, meaning that this variable is a driving variable, but is slightly influenced by other variables.

Table 9. value driven and dependance

	X (Driven)	Y (Depend)
Stgi.1	10	1
Stgi.2	8	2
Stgi.3	5	7
Stgi.4	2	4
Stgi.5	6	7
Stgi.6	3	4
Stgi.7	6	8
Stgi.8	5	7
Stgi.9	4	9
Stgi.10	4	6
Stgi.11	3	1

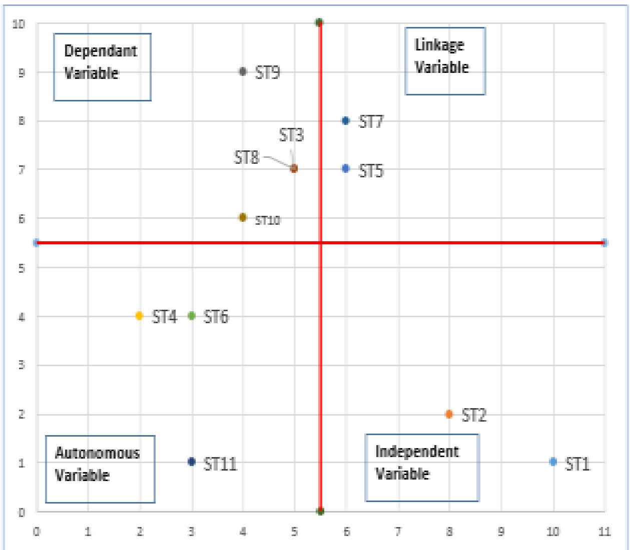

Figure 11. Strategy micmac chart

By iterating five times, a level is obtained for each strategy. The strategy hierarchy is shown in Figure 12 below.

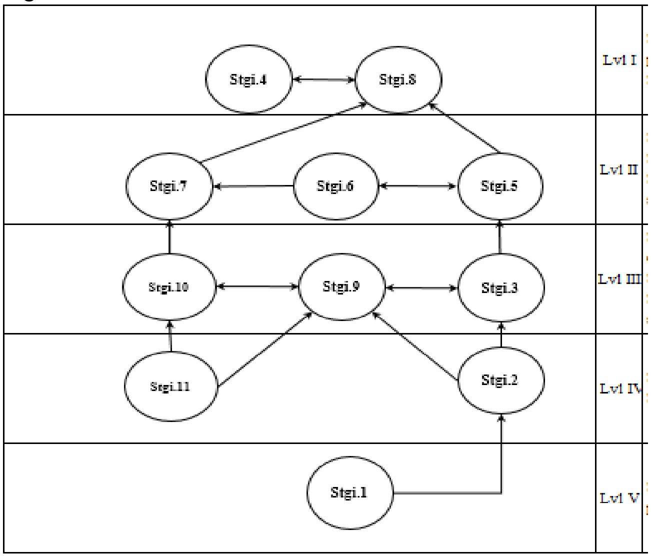

Figure 12. Strategy structure hierarchy

In figure 12, you can see the strategy hierarchy at each level. The relationship between strategies, both at the same level and between levels, can be seen in the questionnaire related to the ISM method. The next stage is the strategy implementation stage.

3.9 Strategy Implementation Stages

The plan for the development stages of Fasharkan Mentigi is generally carried out in a strategic plan (renstra) which is divided into a five-year program.

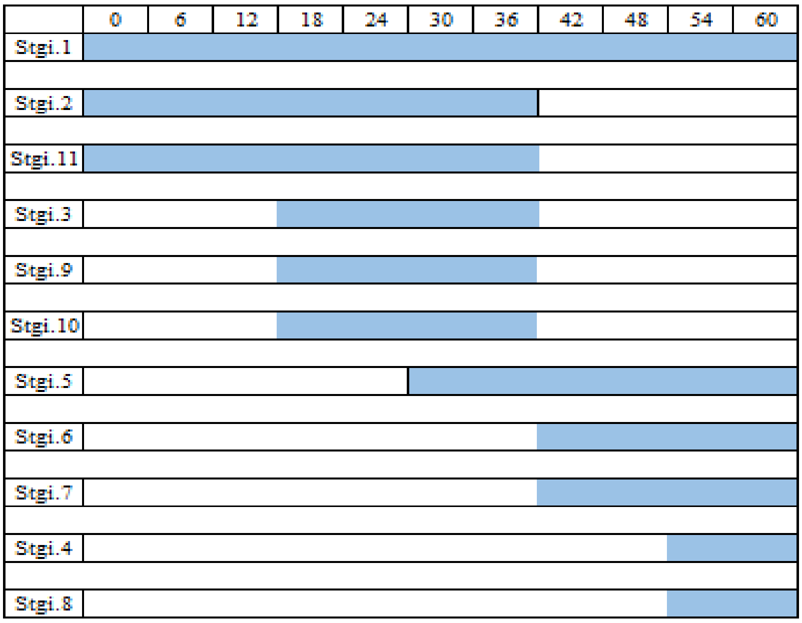

Figure 13. Strategy implementation stage plan

3.10 Roadmap

The output of this process is the formation of a road map that explains how to estimate the time needed to carry out the strategy.

Figure 14. Road Map

4 CONCLUSIONS

In this study, to obtain the expected results, several stages were carried out, starting from the problem identification stage, strategy formulation to determining strategic priorities. Based on the analysis and discussion of the several stages carried out, conclusions can be obtained from this study, including the following:

a. The Humanware Technology component is the technology component with the largest gap between Fasharkan Mentigi and Fasharkan Surabaya, with a gap value of 0.1474. to then use a SWOT analysis on the Humanware technology component in order to get a strategy to increase capabilities.

b. The SWOT analysis resulted in 11 (eleven) strategies to increase the capability of Fasharkan Mentigi Tanjung Uban.

c. Interpretive Structural Modeling (ISM) method is used to analyze the relationship between strategies and provide a hierarchical level for each strategy so that a road map can be drawn up. Produced 5 (five) hierarchical levels from 11 (eleven) existing strategies. The strategies that have the greatest impact are (stgi.1) Fulfillment of supporting facilities and infrastructure used in the maintenance and repair process through increasing the budget and (stgi.2) Fulfillment of Personnel according to DSP at Fasharkan Mentigi, where these two strategies are in the Independence quadrant, namely a strategy with a sufficiently large Driven value. The road map is structured based on the hierarchical level developed by determining the implementation time of the strategy for 5 (five) years which is written in the five-year strategic plan.

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REFERENCE

Ariyoko, HB (2019). Strategy for Improving the Operational Capability of KRI in Koarmada II in Supporting the Concept of Operational Ready Force of the Navy. Surabaya: Naval Technology College.

Bakhtiar, AI (2015). Settlement of Disputes Between Indonesia and Malaysia in the Ambalat Region according to the International Law of the Sea.

Cahyaningrum, G. (2014). Proposed Strategic Planning for Sales Division with SWOT Analysis Method and AHP (Case Study: PT Telekomunikasi Indonesia, East Telkom Division, Witel Suramadu). POMITS Journal of Science and Arts,, 1(1), 1 - 7.

Casban, Marfuah, U., & Rosyadi, LS (2021). The application of technometric methods to measure the contribution of technology components in the production process of small and medium industries. Journal of Industrial Systems Integration, 1-12.

Coccia, M. (2005). Technometrics : Origins, historical evolution and new directions. Technological Forecasting & Social Change, 944-979.

Crispin, S. (2016, August 3). The Diplomat-ASEAN-Beat. Retrieved from Diplomat.com:. Retrieved from http://thediplomat.com/2016/08/will-vietnam-file-a-south-china-sea-case-against-china/

Darmawan, D. (2017). Structured decision making with interpretive structural modeling. Maguwoharjo Yogyakarta: publisher of Elmatera .

Dyson, RG (2004). Strategic development and SWOT analysis at the University of Warwick. European Journal of Operational Research, 631-640.

Firoz, & Rajesh. (2012). Relationship among Supplier Selection Criteria using Interpretative Structural Modeling for Manufacturing Organizations in Kerala. International Journal of Engineering Science Invention, 3(8), 60-70.

Hendarti, DR (2017). Strengthening the Capabilities of Innovation in Increasing the Competitiveness of Ikat Weaving in the City of Kediri. Surabaya: Sepuluh Nopember Institute of Technology.

Hendri, NS (2019). The Strategy for Development of the Fasharkan Ambon Engine Workshop to Support the Combat Readiness of the Third Coordination Command with a Technometric Approach. Surabaya: Naval Technology College.

Hill, T. (1997). SWOT Planning (30 ed.).

Hunger, JD (2003). Strategic Management. Yogyakarta: ANDI.

Keputusan Kasal Nomor KEP/1771/XII/2013. (2013, Desember 23). *tentang Buku Petunjuk Administrasi 78 | Jurnal Teknologi Penginderaan | Volume 2 Nomor 1 Tahun 2020Standardisasi "Pangkalan TNI Angkatan Laut (PUM-7.03).*

Marsetio. (2014). *Sea Power Indonesia.* jakarta.

Suharjo, B. (2008). Analisis regresi terapan dengan SPSS. Yogyakarta: Graha Ilmu.

Susilo, A. K., Ciptomulyono, U., Putra, I. N., Ahmadi, & Suharyo, S. O. (2019). Navy ablity development startegy using SWOT Analysis-Interpretive Structural Modeling (ISM). *Strategic Management*, 30-40.

Syahtaria, M. I. (2019). SWOT application on determining ship yard development strategies: a case study. International Journal of Asro, Vol 10 no. 3.

Syarif, M. (2008). Analisis SWOT : Strategi meraih keberhasilan Balai Diklat Keagamaan Medan . Medan: Kemenag.

Undang-Undang Nomor 34. (2004). *Tentara Nasional Indonesia*.

Utami, R. R., & Pranasari, T. (2020). Kontribusi komponen teknologi industri pengolahan cokelat (Studi kasus CV.X). *Jurnal Industri Hasil Perkebunan*, 38-48.