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Optimization of Maritime Security Through National Shipyard Redistribution: A Case Study in Indonesia

*Optimalisasi Keamanan Maritim Melalui Redistribusi Galangan Kapal
Nasional: Sebuah Studi Kasus di Indonesia*

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Abstract

This study investigates the strategic optimization of Indonesia's National Shipyard Industry, focusing on its role in enhancing maritime security in the Indonesian Archipelago II (ALKI II) region. Utilizing a TOWS analysis and drawing on expert opinions in maritime security, the research examines the internal and external factors influencing the industry, as well as potential future threats. The relocation of the National Capital to Penajem Pasir Utara, East Kalimantan, emerged as a pivotal factor, offering a geographically centralized location and favorable environmental conditions, and presenting an opportunity to equalize the development of the Galkapnas Industry. The results indicate that almost 60% of Galkapnas are concentrated in Java and Batam, highlighting the need for aggressive strategic action to redistribute the industry and facilitate maintenance functions in ALKI II. The study underscores the importance of coordinated efforts among various ministries, particularly the Ministry of Defense, in achieving this redistribution, and concludes with recommendations for stakeholders to embrace the challenge of building and optimizing Galkapnas through extensive development in the ALKI II region, thereby enhancing the Navy's operational capabilities.

Highlights:

- The concentration of almost 60% of Galkapnas in Java and Batam necessitates aggressive redistribution for optimizing maritime security.
- Relocation of the National Capital to Penajem Pasir Utara presents strategic opportunities for balanced development and industrial growth in the maritime sector.
- Coordination among ministries and stakeholders is crucial for implementing the recommended changes, enhancing the Indonesian Navy's operational capabilities.

Keywords: Maritime Security, National Shipyard Industry, Indonesia, TOWS Analysis, Galkapnas Redistribution

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Introduction

The Unitary Republic of Indonesia is the largest archipelago in the world which is geographically located in a strategic position, namely a cross between two continents, the Asian Continent and the Australian Continent, and two oceans, the Indian Ocean and the Pacific Ocean [1], [2] [3]. The number of islands is 17,504. As an archipelagic country, Indonesia recognizes and ratifies the 1982 United Nations Convention on the Law of the Sea (UNCLOS 1982) [4]. By ratifying UNCLOS 1982, the Indonesian state is obliged to provide a channel for ships and aircraft of other countries that will pass through [5]. This channel is a channel for shipping and aviation that can be utilized by foreign ships or aircraft over the sea to carry out shipping and aviation in peace and in a normal manner [6]. Hereinafter referred to as the Indonesian Archipelago Channel (ALKI), the ALKI in Indonesia is divided into three, namely ALKI I, ALKI II and ALKI III. ALKI II functions as a shipping lane from the Sulawesi sea, across the Makassar Strait, Flores Sea, and Lombok Strait to the Indian Ocean and vice versa [7].

The relocation of the State Capital (IKN) from Jakarta to the Penajem Paser Utara district of East Kalimantan where it is very close to ALKI II, has consequences for the Navy in general and Koarmada II in particular to maintain the security and safety of IKN from the Maritime / marine aspects [8], [9]. In maintaining the security and safety of the national capital, the Indonesian Navy requires defense equipment in the form of KRI (Kapal Republik Indonesia) elements [10]. As happens with other equipment, ships or KRIs both used and not used will require a maintenance function to achieve the expected life time. What is meant by the maintenance function in the navy is all efforts, activities and work carried out to ensure material readiness and maintain material readiness during the programmed life cycle. The Navy is a weapon that is manned not armed personnel, therefore the Navy's weapon system in the form of ship material needs to be fostered [11]. This material development has two functions, namely the main function and the supporting function. The main functions include determining needs, research and development, procurement, distribution, maintenance and elimination. While the supporting function consists of material treasury administration, investment in state property (BMN) and logistics development information. Maintenance itself is all efforts, activities to ensure material readiness and maintain material readiness during the programmed life cycle [12]. Judging from the nature of maintenance can be carried out preventively / prevention and corrective / repair, when viewed from the level of maintenance is divided into three levels, namely maintenance of the middle organic level and Depo [13], [14]. Organic maintenance is light maintenance, carried out by personnel in the organization where the maintained equipment is located. While maintenance for intermediate and depot levels is maintenance that requires certain expertise and equipment carried out by material builders at the Headquarters, Kotama, TNI AL Fasharkan / Shipyard / Injasmar level [15]. The Galkapnas (National Shipyard) industry is shipyards in Indonesia that are considered capable of carrying out maintenance and repair of Navy ships. As we know, currently the maintenance and repair functions owned by the Navy are not optimally implemented and still require cooperation with the national defense industry in this case the national shipyard industry. However, for now the national shipyard industry in Indonesia has not been optimally distributed, and is still centered on Java Island and Batam Island.

By looking at the map of the distribution of the shipyard industry above, the government should take policies through strategies so that the national shipyard industry can be spread evenly and optimally throughout Indonesia, especially around ALKI II where the region will be the entrance to the IKN (National Capital) of the archipelago by sea. Which of course will demand an increase in the operating element which has implications for the maintenance function that can be carried out by Injasmar.

Method

Resilience in Maritime Security

Maritime security resilience refers to the ability of a country or region to protect its sea waters from various threats and disturbances that can endanger national security and interests [16]. The concept of resilience in maritime security includes efforts to prevent, detect, and mitigate threats in national waters and maritime areas, and involves various elements of marine security and defense, including the navy, coast guard, maritime authorities, and other related institutions [17], [18] Resilience in maritime security includes several aspects, including:

- a. The ability to conduct surveillance and patrols in national waters to prevent illegal acts such as piracy, smuggling, fish theft, and other illegal activities.
- b. Efforts to protect waters from threats originating from foreign countries, including potential military conflicts, terrorist infiltration, and spying activities.
- c. Protecting and ensuring the sustainable exploitation of national maritime resources, including natural resources, sea trade routes and critical infrastructure around the waters.
- d. Carry out law enforcement and eradicate illegal activities at sea, including organized crime, illegal fishing and human trafficking.

e. Confronting and responding to natural disasters at sea, such as earthquakes, tsunamis and shipwrecks, and providing humanitarian assistance and rescue for victims.

f. Cooperate with other countries to enhance regional and global maritime security, including joint patrols, information sharing and addressing transboundary issues.

These aspects are important because oceans and waters play a crucial role in international trade, transportation, natural resources and global security. Indonesia increasingly realizes the importance of maritime security in dealing with various threats that can disrupt regional stability and security and affect the sustainability of development in IKN.

TOWS Analysis

TOWS Analysis (often also referred to as TOWS Matrix) is a strategic analysis tool used to evaluate the relationship between Internal Factors (Strengths and Weaknesses) and External Factors (Opportunities and Threats) in an organization or business environment [19]-[21]. This analysis helps an organization to identify appropriate strategies to maximize its internal strengths, take advantage of external opportunities, overcome internal weaknesses, and face external threats. Steps in TOWS Analysis [21]:

- a. identify external opportunities and threats.
- b. identify internal strengths and weaknesses.
- c. create a TOWS matrix.
- d. identify and prioritize strategies.
- e. design action plans and implement the selected strategies to achieve organizational goals.

Result and Discussion

Results

Analysis with the TOWS method uses several factors including strengths, weaknesses, opportunities and constraints in order to support the maintenance function. The following is a description of the metrics that will be used in the evaluation, ranking, and weighting:

a. Opportunity factors or opportunities consisting of:

1. The world maritime axis and the government's Sea Highway program are opportunities for the Galkapnas Industry to take part in ALKI II.
2. Blue economy is an opportunity for Galkapnas to compete in the ALKI II sea area.
3. The relocation of IKN is a good opportunity for the development of the Galkapnas Industry in the ALKI II Region.

b. Threat factors or obstacles consisting of:

1. Clear regulations are needed so that the development of the Galkapnas Industry in ALKI II can develop properly.
2. Constraints in terms of the budget owned by each Galkapnas Industry are different
3. Organizational culture and work culture dependence on what already exists so that it is less responsive to changes this can be an obstacle. Strength factors or strengths consisting of:

c. Strength factors or strengths consisting of:

1. Optimizing human resource empowerment to increase the spread of the Galkapnas Industry.
2. The synergy of the Galkapnas Industry, the government and the Navy is quite good.
3. The Galkapnas Industry as the main component supporting the Navy in carrying out maintenance.

d. Weakness factors or weaknesses consisting of:

1. The competence of human resources in the field of the National Shipyard Industry in the ALKI II region is not yet adequate.
2. The economic level and economic pace in the ALKI II region are not yet optimal.
3. Not yet optimal government attention to the National Shipyard Industry.

Determination of the weight of strategic factors was determined based on the results of group 1 discussions totaling 11 people. The weight value ranges between 0.0 (not important), 0.25 (slightly important), 0.5 (moderately important), 0.75 (important) and 1.0 (very important). The rating of each factor is given a value between 1 and 4 with details of 4 = very significant, 3 = significant, 2 = moderately significant and 1 = slightly significant. Determination of the ranking and weighting that will be used as material for analyzing the TOWS component in determining the strategy as shown in figure 1 and 2.

NO	STRATEGIC FACTORS EXTERNAL	RANK					QMS MARK	WEIGHT	
		TP	KP	CP	P	SP			
		0	0.25	0.5	0.75	1			
A OPORTUNITY									
1.	The world maritime axis and the government program Sea Highway are opportunities for the national shipbuilding industry to take part in ALKI II			1	2	8	11	0.91	0.19
2.	Blue economy is an opportunity for Galkapnas to be competent in the marine area of ALKI II			1	3	7	11	0.89	0.19
3.	The transfer of IKN is a good opportunity for the development of the Galkapnas Industry in the ALKI II Region	1	2	2	6	11	0.80	0.17	
B THREATS									
1.	Clear regulations are needed so that the development of the Galkapnas Industry at ALKI II can develop properly	3		2	3	3	11	0.57	0.12
2.	Constraints in terms of budget owned by each Galkapnas Industry are different	1	4	3	3	11	0.68	0.15	
3.	Organizational culture and work culture dependency on what already exists so that they are less responsive to changes, this can be an obstacle.	1	1	2	7	11	0.84	0.18	
AMOUNT							4.59	1.00	

Figure 1. Determination Weight External Factors

NO FACTORS STRATEGY INTERNAL	RANK					QMS MARK	WEIGHT
	TP	KP	CP	P	pp		
	0	0.25	0.5	0.75	1		
A STRENGTH							
1.	Optimizing the empowerment of human resources to increase the spread of the Galkapnas Industry.					0.93	0.18
2.	The synergy between the Galkapnas Industry, the government and the Indonesian Navy is quite good.					0.86	0.17
3.	The Galkapnas industry is the main component supporting the Indonesian Navy in carrying out maintenance					0.89	0.17
B WEAKNESS							
1.	The competence of human resources in the field of Galkapnas Industry in the ALKI II area is not sufficient					0.70	0.13
2.	The level of the economy and the pace of the economy in the ALKI II area have not been optimal					0.91	0.17
3.	The government's attention to the National Shipyard Industry has not been optimal.					0.93	0.18

Figure 2. Determination Weight Factor Internals

After done weighting so determined Also Ratings from factor the For determine its significance with strategy optimization Which will determined And result showed on the figure 3 and 4.

NO	FACTOR EXTERNAL	INFLUENCE					QMS	RATING	PEMB
		TP	SP	CP	P	SP			
		0	1	2	3	4			
OPPORTUNITY (OPPORTUNITY)									
1	The world maritime axis and the government program Sea Highway are opportunities for the national shipbuilding industry to take part in ALKI II	0	0	1	2	8	11	3.09	3
2	Blue economy is an opportunity for Galkapnas to be competent in the marine area of ALKI II	0	0	1	3	7	11	2.73	3
3	The transfer of IKN is a good opportunity for the development of the Galkapnas Industry in the ALKI II Region	0	1	2	2	6	11	2.64	3
THREATS (CONSTRAINT)									
1	Clear regulations are needed so that the development of the Galkapnas Industry at ALKI II can develop properly	3	0	2	3	3	11	1.45	1
2	Constraints in terms of budget owned by each Galkapnas Industry are different	0	1	4	3	3	11	1.91	2
3	Organizational culture and work culture dependency on what already exists so that they are less responsive to changes, this can be an obstacle.	0	1	1	2	7	11	2.82	3

Figure 3. Determination of External Factor Rating

NO FACTOR INTERNAL	INFLUENCE						QMS RATING	PEMB					
	TP	SP	CP	P	SP	QMS RATING							
	0	1	2	3	4								
STRENGTH (STRENGTH)													
1	Optimizing the empowerment of human resources to increase the spread of the Galkapnas Industry.					0	0	1	1	9	11	3.73	4
2	The synergy between the Galkapnas Industry, the government and the Indonesian Navy is quite good.					0	0	1	4	6	11	3.45	3
3	The Galkapnas industry is the main component supporting the Indonesian Navy in carrying out maintenance					0	0	2	1	8	11	3.55	4
WEAKNESS (WEAKNESS)													
1	The competence of human resources in the field of Galkapnas Industry in the ALKI II area is not sufficient					1	2	1	1	6	11	2.82	3
2	The level of the economy and the pace of the economy in the ALKI II area have not been optimal					0	0	1	2	8	11	3.64	4
3	The government's attention to the National Shipyard Industry has not been optimal					0	0	1	1	9	11	3.73	4

Figure 4. Determination of Internal Factor Rating

Then done determination Score (showed on figure 5 and 6) as well as determination coordinate TOWS quadrant (shown in figure 7 and 8).

NO	WEIGHT RATING SCORE			
FACTOR EXTERNAL				
OPPORTUNITY (OPPORTUNITY)				
1	The world maritime axis and the government program Sea Highway are opportunities for the national shipbuilding industry to take part in ALKI II	0.194	3	0.600
2	Blue economy is an opportunity for Galkapnas to be competent in the marine area of ALKI II	0.189	3	0.516
3	The transfer of IKN is a good opportunity for the development of the Galkapnas Industry in the ALKI II Region	0.170	3	0.448
Total Opportunity			1,564	
THREATS (CONSTRAINT)				
1	Clear regulations are needed so that the development of the Galkapnas Industry at ALKI II can develop properly	0.121	1	0.177
2	Constraints in terms of budget owned by each Galkapnas Industry are different	0.146	2	0.278
3	Organizational culture and work culture dependency on what already exists so that they are less responsive to changes, this can be an obstacle.	0.180	3	0.506
Total Threats			0.961	

Figure 5. External Factor Scores

NO	WEIGHT RATING SCORE			
FACTOR INTERNAL				
STRENGTH (STRENGTH)				
1	Optimizing the empowerment of human resources to increase the spread of the Galkapnas Industry.	0.178	4	0.664
2	The synergy between the Galkapnas Industry, the government and the Indonesian Navy is quite good.	0.165	3	0.571
3	The Galkapnas industry is the main component supporting the Indonesian Navy in carrying out maintenance	0.170	4	0.601
Total strength			1,836	
WEAKNESS (WEAKNESS)				
1	The competence of human resources in the field of Galkapnas Industry in the ALKI II area is not sufficient	0.135	3	0.380
2	The level of the economy and the pace of the economy in the ALKI II area have not been optimal	0.174	4	0.632
3	The government's attention to the National Shipyard Industry has not been optimal	0.178	4	0.664
Total Weaknesses			1,677	

Figure 6.

INTERNAL (X) MARK	EXTERNAL (Y) MARK
strength	1,836 Opportunity 1,564
Weaknesses	1,677 Threats 0.961
Difference	0.160 Difference 0.604

Figure 7. Calculation of Quadrants (x-axis and y-axis)

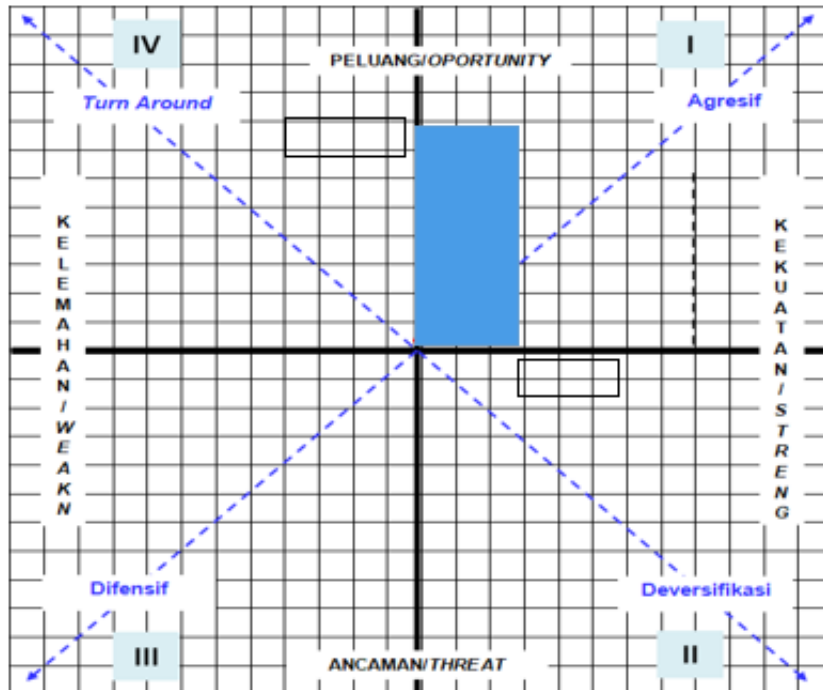


Figure 8. Quadrant TOWS

Discussion

TOWS is an analytical tool that is often used to analyze a complex problem or to make plans that have strategic value because TOWS is one of the tools used in strategic management. The use of TOWS analysis will be based on the logic that the success of an organization cannot be separated from the influence of external and internal conditions of the organization. In conducting TOWS Analysis, we will try to choose a strategy to use strengths by taking advantage of existing opportunities to minimize weaknesses while overcoming the threats faced. By knowing the factors that support and hinder an organization, we better understand the condition of the organization, this will have implications for taking action to be easier and more directed. TOWS stands for Threats, Opportunity, Weakness, and Strength, as for the explanation as follows:

1. Strength (strength) is a positive factor / condition obtained from within the organization that makes the organization will continue to be able to grow, develop, so that it can achieve better conditions.
2. Weakness is a negative factor / condition obtained from within the organization that causes the organization to experience an unexpected situation, namely destruction, defeat, and degradation or continuously in a downward trend.
3. Opportunity is a positive factor / condition that affects and comes from outside the organization that might make the organization advance, develop, or will achieve a much better condition than before.
4. Threats are negative factors/conditions that affect and originate from outside the organization that cause the organization to experience unexpected conditions, namely destruction, defeat or degradation and continuous decline in conditions.

In the TOWS analysis above, it can be analyzed that the IFAS (Internal Factor Analysis Strategy) value consisting of strengths is 1,836, while weaknesses are 1,667 when compared between strengths and weaknesses, there is a positive difference in strength or strength of 0.160. While the TOWS analysis of the EFAS (External Factor Analysis

Strategy) factor consisting of Opportunity (opportunity) is 1.564, while Threats (threats) are worth 0.691 when compared between opportunities and Threats, there is a positive value on the opportunity of 0.604, so that the results of the analysis of the Galkapnas Industry deployment in the ALKI II region show that there is a strength or strength that supports being supported by adequate opportunities to take real and aggressive action strategies.

Optimizing the development or optimizing the spread of the Galkapnas industry is located in quadrant I (S-O) which provides advantages for Galkapnas industry activists if they take aggressive action to take opportunities to spread the Galkapnas Industry to improve maintenance functions in the ALKI II Region both to support the Navy and other Stakeholders who are active in the ALKI II region. If the position in the diagram of the results of the TOWS analysis in diagram I requires organizational activists to take aggressive action strategies, or to act immediately, this is because in quadrant I there is currently a very favorable situation, the organization has opportunities and strengths so that it can take advantage of existing opportunities and strengths.

Conclusion

The relocation of the National Capital from Jakarta to Penajem Pasir Utara, East Kalimantan represents a significant and strategic move to equalize development across Indonesia and address Jakarta's dense population and geographical challenges. Penajem Pasir Utara's central location within the Unitary State of the Republic of Indonesia and its minimal susceptibility to natural disasters make it an attractive choice. This transfer is expected to influence the maritime sector, particularly in the ALKI II region, and offers opportunities for unevenly distributed industries such as Galkapnas to expand. Currently, with over 60% of Galkapnas concentrated on Java and Batam, the strategic relocation to ALKI II may facilitate more effective naval maintenance of the Republic of Indonesia's ships (KRI). Through TOWS analysis, positioning the distribution of Galkapnas in quadrant I (S-O), the relocation necessitates aggressive strategic actions, including building and optimizing Galkapnas in the ALKI II region. The implication of this move is the potential to enhance the country's maritime capabilities, boost regional development, and further balance economic opportunities across the archipelago. Further research may delve into the socio-economic impacts, environmental considerations, and detailed strategic planning required to harness the full potential of this relocation, ensuring that the execution aligns with Indonesia's broader development goals.

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