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ANALYSIS OF TECHNOLOGY FORECASTS AND MISSILE SELECTION ON THE COASTAL DEFENCE CONCEPT TO DEAL WITH MILITARY THREATS IN THE NORTH NATUNA SEA

Rudi Hartono Siregar[1], Rakhmad Susilo[2], Azi Wardiana[3]

[1,2,3] *Indonesian Naval Technology College, Bumimoro-Morokrembangan, Surabaya 60187, Indonesia*
E-mail: rudisiregar@gmail.com

ABSTRACT

In the face of military threats in the North Natuna Sea, the concept of coastal defense is necessary to protect the coastal areas from enemy attacks. One of the important aspects in this concept is the selection of guided missiles that correspond to the existing geographical situation and conditions. Currently, Indonesia does not have a coastal defense system in maintaining its beaches, even though Indonesia has the second longest beach in the world. In this study, an analysis of technology forecasts and the selection of the right guided missiles to support the concept of coastal defense was carried out. By using the AHP method, decision makers can determine decisions with alternatives that have a creteria that weighs almost the same. Because without using metde sometimes the decision taken is not the best decision, although at the time of making the decision it is believed that the decision taken is the best. So this research is expected to provide effective recommendations in the selection of guided missiles and the use of appropriate technology in the face of military threats in the North Natuna Sea.

Keywords: *Missile Selection technology forecast, AHP Method, Natuna*

1. INTRODUCTION

The South China Sea is the most important issue today, especially in the North Natuna waters, which are Indonesian waters. China claims the area as a traditional fishing area and although it ratified UNCLOS in 1982, it does not recognize other countries' exclusive economic zones in the South China Sea. China claims the region with a nine-dash line stretching all the way to Natuna, which is thousands of kilometers away from mainland China. The area within the nine-dash line includes the Paracel Islands and the Spatly Islands Sea which are also claimed by countries such as Vietnam, Taiwan, the Philippines, Malaysia and Brunei Darussalam. Forcasting technology (TF) is very important in decision making in various organizations, including the Navy. In the context of the North Natuna waters, which are Indonesian waters and are an issue related to the South China Sea, TF can help the Navy make plans for the development of military and marine technology in the future by taking into account the military strength of countries that have interests around these waters. To carry out forecasting the development of military power, it is carried out using the linear regression method with the help of Ms. Excel software. Furthermore, an analysis of the selection of the best alternative missiles using the AHP method was carried out with the help of the Super Decision software. In the context of decision making, the AHP method helps determine decisions

with alternatives that have almost the same weight of criteria, making it easier for decision makers to analyze decisions made.

The conflict in the South China Sea negatively affects various aspects, be it economic, political, security and environmental. Here are some of the impacts of the conflict in the South China Sea first disruptions to regional security and stability: Conflicts in the South China Sea raise tensions and concerns over an escalation of the conflict that could threaten regional security and stability. This can trigger political instability and increase the risk of military conflict between countries in the region. Second disruption to international trade routes: Conflicts in the South China Sea disrupt international trade routes passing through the region. This could have a negative impact on the global economy, particularly for countries heavily dependent on imports and exports through the South China Sea. Economic losses: Conflicts in the South China Sea can trigger disruptions to economic sectors, especially in terms of investment, trade and tourism. This conflict can cause economic losses to the countries involved, as well as hinder economic growth in the region. Environmental damage:

Conflicts in the South China Sea can negatively impact the region's environment and marine ecosystems. These conflicts can trigger illegal actions such as overfishing, marine pollution, and irresponsible extraction of marine resources. Tense diplomatic relations: Conflicts in the South China Sea can also strain diplomatic relations between countries in the region. This can hinder efforts to find a peaceful solution to the conflict.

This negative impact of the conflict in the South China Sea demonstrates the importance of cooperation and dialogue between countries in the region to resolve conflicts peacefully and maintain regional stability and security.

2. LITERATURE REVIEW

In writing this research, it also uses previous journals both national and national scale as references and as well as literature studies in the completion of this research. The previous journals include Chiu, Y. J., (2006). Marketing strategy based on customer behaviour for the LCD-TV. International Journal and Decision Making. Nor Azura MD Ghai, Liong Choong-Yeun & abdul Aziz (2009) Extraction and Selection of Basic Statistical Features for Forensic Ballistic Specimen Identification. Smith, C.L. & Cross, J.M. 1995. Optical Imaging Techniques for Ballistics Specimens to Identify Firearms. Proceedings of the IEEE International Carnahan Conference on Security Technology, October: 275-289. Hori, S., & Shimizu, Y. (1999). Designing methods of human interface for supervisory control systems. Control Engineering Practice, 7(11), 1413–1419. Ariyanto, Agus Tri (2011), "Selection of Anti-Submarine Helicopters as Helicopter Target Reporting Units at KRI Klas Ahmad Yani After the Installation of Yakhont Missiles Using the Analytic Network Process (ANP) Method". Final Project, Department of Industrial Engineering, STTAL, Surabaya. Figuera, Jose., Greco, Salvatore and Ehrgott, Matthias (2005). Multiple Criteria Decision Analysis. State of the Art Surveys. Springer Science + Business Media, Inc. Boston. Hori, S., & Shimizu, Y. (1999). Designing methods of human interface for supervisory control systems. Control Engineering Practice, 7(11), 1413–1419. Ramdan, Taufik (2010), "Selection of Surface-to-Surface Missiles for KRI Fatahillah Class Ships with Damatel and ANP Method Approaches". She will upgrade new missile so for get the best missile the Navy need decide some alternative missile with their criteria. Final Project, Department of Industrial Engineering, STTAL, Surabaya. Andriansyah, Luthfi (2012), "Selection of Surface-to-Surface Guided Missiles (Missiles) (SSM) in KRI Trimaran Class Type with the Analytic Network Process Method, base on shape and tonage of trimaran warship she has own criteria for her missile. To choose the best missile they must use ANP methods, with some alternative and some criteria. Engineering and System Safety. And the last Fahmi, Muhammad Fahmi; Setiyono, Budi; Setiawan Wahyudi research regarding "Decision Support System for Optimization of Concrete Construction Mix Design Using AHP Method," Nero Scientific Journal.

3. MATERIALS AND METHODS

a. Decision Support System

A decision support system (DSS) is an interactive information system that provides information, modeling, and data manipulation. Decision Support System is a system tool that is able to solve problems efficiently and effectively, which aims to help decision making choose various decision alternatives that are the result of processing information obtained using models
Decision

b. Analytical Hierarchy Process (AHP)

Basically, SPK is designed to support all stages of decision making from identifying problems, selecting relevant data, determining the approach used in the decision-making process, to evaluating elections. The Decision Support System uses the concept of programmatic and unprogrammed decisions with a decision-making phase that reflects on the current thinking of Decision Support Systems (DSS). The system is a computer-based system aimed at helping decision makers by utilizing certain data and models to solve various unstructured problems. Decision-making problems can be complex due to the involvement of several goals and criteria. One tool that is suitable for candidate selection or prioritization is the Analytic Hierarchy Process (AHP) developed by Thomas L. Saaty.

c. Military Power Forecast of Other Countries

The problem in forecasting the military strength of other countries lies in the uncertainty of the available information. However, regression analysis can be used to estimate military strength based on the military budget used by the country. Factors such as political relations, security threats, and national resources also affect a country's military strength. The country of China has a strong military strength with a defense budget of US$ 207 billion, the number of military personnel is 2,035,000, the number of aircraft is 1,903, and 515 warships including aircraft carriers, frigates, and submarines. The American country has a large military strength with a defense budget of US$ 782 billion, the number of military personnel is 1,358,500, the number of aircraft is 5,217, and 480 warships including aircraft carriers, frigates, and submarines. Meanwhile, the Indonesian state has a smaller military force with a defense budget of US$ 9 billion, the number of military personnel is 395,500, the number of aircraft is 110, and several warships including frigates, submarines, and corvettes.

Indonesia's neighbors such as Malaysia and Singapore have lower defense budgets, fewer military personnel and defense equipment than China and America. China has a very large defense budget and has a larger number of military personnel and defense equipment than Indonesia. Meanwhile, America is a large country with global interests and has a very large defense budget and a very large number of military and defense personnel. Indonesia has a lower defense budget and fewer military personnel and defense equipment than these countries.

4. RESULT AND DISCUSSION

a. Regression Analysis

This regression analysis is to estimate the strength of neighboring countries by knowing the relationship between the military budget and military power. So, by knowing the military budget, we will know how big the military power is. Furthermore, forecasting will be carried out by looking for the relationship between the military budget and the military strength owned. The analysis used by using the Linear Regression method is assisted with Microsoft Excel software. The result of calculating linear regresion can be seen in the table 1.

Table 1. Regression Statistics

Regression Statistics	
Multiple R	0,98797678
R Square	0,97609812
Adjusted R Square	0,96813083
Standard Error	437,168843
Observations	5

From Table 4. 2 can be explained The value of Multiple R or the Correlation Value between X and Y of 0.98797678 means that variable X The defense nod greatly affects the variable Y of the defense equipment owned , the influence it has is quite large.

Table 2. Anova

	Df	SS	MS	F	Significance F
Regression	1	52,89456056	52,89456056	1,093575005	0,372517483
Residual	3	145,1054394	48,36847981		
Total	4	198			

ANOVA					
	Df	SS	MS	F	Significance F
Regression	1	23414297,4	23414297,4	122,513156	0,00157972
Residual	3	573349,791	191116,597		
Total	4	23987647,2			

The significance value of F in the table provides information on whether the null hypothesis can be rejected or not. If the significance value of F is less than alpha (the degree of significance established earlier), then the null hypothesis is rejected and the alternative hypothesis is accepted, which means that at least one of the independent variables has a significant effect on the dependent variable. Whereas if the significance value of F is greater than alpha, then the null hypothesis is accepted and the alternative hypothesis is rejected, which means that there is no significant relationship between the independent variable and the dependent variable. In the table mentioned, the significance value is 0.00157972 and alpha is 0.05, so it can be concluded that there is a significant influence between the variables X and Y. Furthermore, the determination of the regression equation is carried out based on the results of data processing in Table 9.4.

Table 3. Regression Equation Results

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	253,952561	234,87033	1,08124581	0,35875253	-493,509653	1001,41477
X Variable	7,1855428	0,64918461	11,0685661	0,00157972	5,119547626	9,25153797

The Regression Equation can be seen from the Coefficients Column,
Y = a + bx
a= 253.95
b= 7.1855
Y = 253.952561 + 7.1855428X

The effect of the military budget (X) on the defense posture of a country (Y), where if X=0 then Y=253.952561. Furthermore, with the increase in the value of X (military budget), the defense posture will increase by 7.19 times, so it can be used to estimate the military strength of the country facing Indonesia. The discussion then discussed the need for coastal defense with missiles as the best solution and the AHP method was used to compare the criteria for missiles that have their own advantages and disadvantages.

b. Missile Selection Problems

The problem of choosing missiles for Indonesia's coastal defense, where each missile alternative has advantages and disadvantages that need to be considered comprehensively. To assist in decision making, an Analytical Hierarchy Process (AHP) method is used that solves complex problems intuitively by dividing problems into a structured and systematic hierarchy. The comparison scale is used to measure the intensity of importance at each level of the hierarchy which includes objectives, factors, criteria, subcriteria, and the last option level. Thus, AHP can be helpful in determining the best alternative by considering various criteria comprehensively.

Table 4. intensity of AHP Importance

Intensity of importance	**information**
1	Both elements are equally important
3	One element is a bit more important
5	One element is more important than the other
7	One element is definitely more absolutely important than the other
9	One element is absolutely important than the other
2,4,6,8	Values between two adjacent consideration values
Opposite	If the activity i gets one number compared to the activity j, then j has the opposite value compared to i

c. Overview of the missile alternatives to be selected

An overview of coastal defense missiles involving integrated systems with controlling commands stationed at strategic points along the coast and integration with coastal radar systems. The discussion was limited to the selection of coastal defense missiles to be selected, which were conducted through discussions and literature studies by group members. There are four coastal defense missiles that are alternatives to the missile selection analysis, which were chosen because they have competing specifications in their class and require the AHP method to determine the best missile for Indonesia's coastal defense.

d. Missile Selection

The focus of this research is on the formulation of a model based on AHP Stacking or prioritizing four alternatives to coastal defense missiles. The steps to be implemented are as follows.

The process of determining the criteria is carried out with the results of a Small Group Discussion which is assumed to be an expert opinion to determine the criteria to be used in the selection of the best missile using the AHP method. Criteria are determined based on several aspects which include performance, reliability, capabilities, technology, cost, and strategic factors.

Table 5. Coastal Defense Missile Selection Criteria

No.	**Criterion**	**Description**
1.	Missile range range	Each missile has its own specifications, for example, it rarely reaches missiles. The range is divided into three, namely the short distance from 100km, the medium distance distance of 100-200km, and the long distance

No.	Criterion	Description
		above 200km. The farther the reach, the larger the dimensions and the more expensive it is. Range has significance for coastal defense. Because the farther it is, the farther the enemy is from the coastline, so that the coast can be safe from the enemy.
2.	Missile Price	Missiles are a lot of smart weapons with the latest technology. Starting from the technology that determines the accuracy of the target, which has anti-jamming capabilities, there are those who can avoid anti-missile cannons. Of all the missile capabilities, it will affect the price of the missile, especially since the missile has proven victorious in a certain war, the price will be even more expensive. For example The price of exocert rose after superior use in the gulf war. Until now, the price of Exocet is still more expensive because it has been tested in war and won.
3.	Destructive power	The destructive power capability of the missile depends on the weight of the explosives carried. The larger the dimensions then the greater the destructive power. The ability to destruct power also has a relationship with the range, because missiles in addition to carrying explosives also carry fuel to fly, the longer the range, the more the impact on the explosives carried.
4.	Sustainability Spare parts and logistics	What is meant by sustainability here is that the continuation of this missile product is still in production for a long time or not, and spare parts and maintenance are easy or difficult. Because missiles are stored for a long time there are vulnerable parts, for example their push, either on jet engines if using a ramjet, or its propellant

e. Hierarchy Formation

Based on the discussions carried out, the creteria results in table 9.6 were obtained. In the table, it is explained that there are four creteria, namely selection based on range, price, explosive power and sustainability. The AHP structure that will be used in Taskapok consists of three levels as shown in the figure below with the following description:

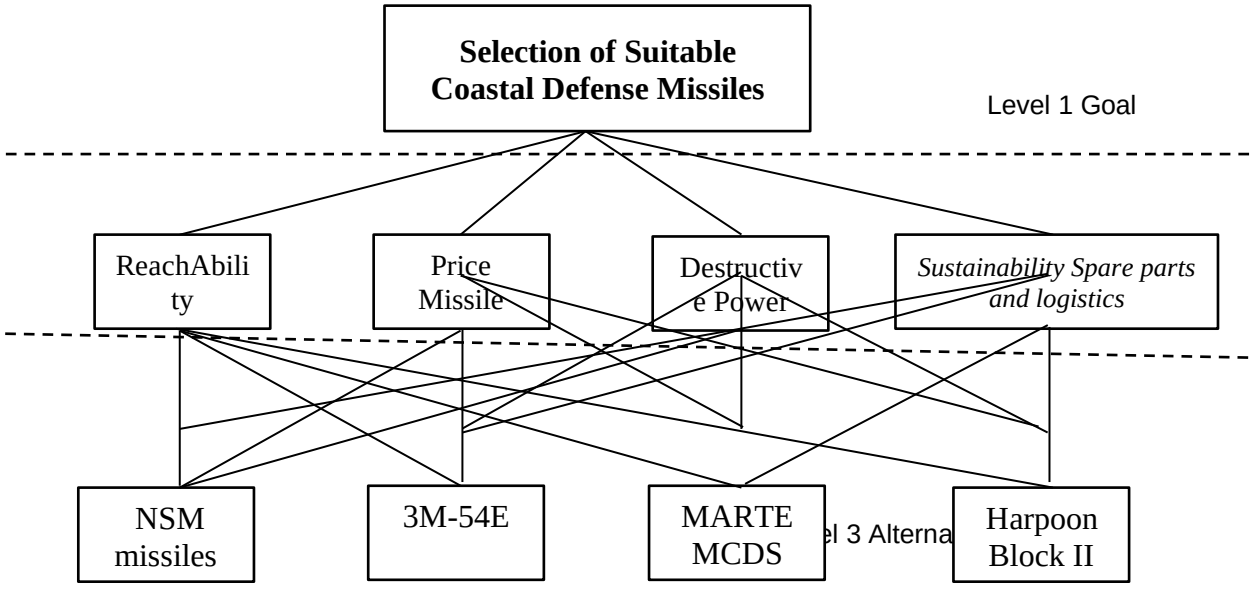

Figure 1. AHP Hierarchical Model Structure

Level 1 is the purpose of decision making, in this case it is to determine the best missile alternative for coastal defense on the coast of Indonesia. At level 2 is the creteria in the AHP model above, there are four creteria, namely range distance, missile price, crushing power, and sustainabilitay spare parts and logistics. As for the alternatives to be chosen, they are the Harpoon block II missile from America, the 3M-54E missile from Russia, the MARTE MCDS (Mobile Coastal Defense System) missile from France, and finally the NSM missile from Kongsberg, Norway. For the creteria comparison matrix, it can be seen in the table below.

Table 6. Comparison Matrix Between Creteria

Missile Selection	ReachAbility	Missile Price	Destructive Power	Sustainability Logistics
ReachAbility	1	4	2	2
Missile Price	0,25	1	0,33	0,33
Destructive Power	0,5	3	1	0,33
Sustainability Logistic	0,5	3	3	1

f. Processing Data with Super Decission

Super Decision is a software application used to help with multi-criteria decision making. The application allows users to generate and take into account a variety of different criteria and evaluate the available options based on those criteria. The first step taken in data processing in super decisions is to form relationships between levels.

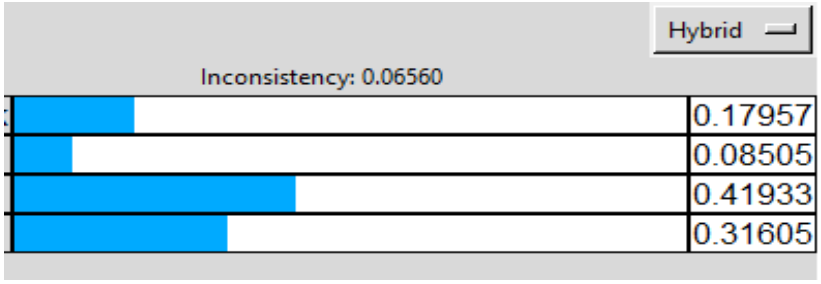

Figure 2. Creteria weights

The weight for the most important in this selection is the range with a value of 0.419, then the sustainability creteria with a weight of 0.316, then the explosive power creteria with a weight of 0.179 the last one is the price creteria with a weight of 0.085. The questionnaire result data is entered into the super decision software in the form of a pairwise comparison matrix and the inconsistency ratio value will automatically appear. If the inconsistency ratio value is greater than 10% (0.10) then data retrieval must be carried out. With an inconsistency value of 0.065, it is smaller than the maximum value of inconsistency, so the results of the answers in the pairwise comparison above are consistent.

1) Pairwise Comparison Against Explosive Power

Pairwise comparison to explosive power by comparing alternatives to explosive power owned. There are 6 comparisons as can be seen in the image below.

Figure 3. Pairwise Comparison of Explosive Power

In the picture above is a pairwise comparison picture of all alternatives to explosive power. Alternative comparison between harpoon BII with NSM missile, Harpoon BII with 3M-54E missile, Harpoon BII with MARTE MCDS missile, NSM missile with MARTE MCDS, NSM missile with 3M-54E missile, 3M-54E missile with MARTE. By carrying out the weighting of each alternative texplosive power, the results are obtained as shown in figure 4.

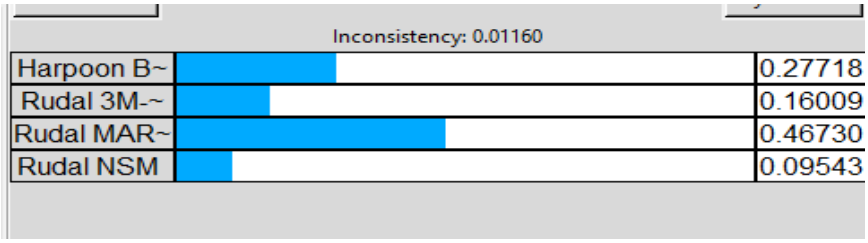

Figure 4. Alternative Weighting Results to Explosive PowerSource: Software Processed Data

The weights of the four alternative shore defense missiles have been determined using the AHP method with the result that the MARTE missile has the highest weight on the explosive power criterion with a value of 0.467, followed by the Harpoon with a weight of 0.277, the 3M-54E missile with a weight of 0.16, and the NSM missile with a weight of 0.0954. The results of the questionnaire are entered into the super decision software and checked for the value of the inconsistency ratio. Because the inconsistency value in figure 4.6 is 0.0116 which is lower than the maximum value of 10% inconsistency, it can be concluded that the results of the pairwise comparison above are consistent.

3) Pairwise Comparison Against Price

Pairwise comparison by comparing alternatives to their prices. There are 6 comparisons as can be seen in the image below.

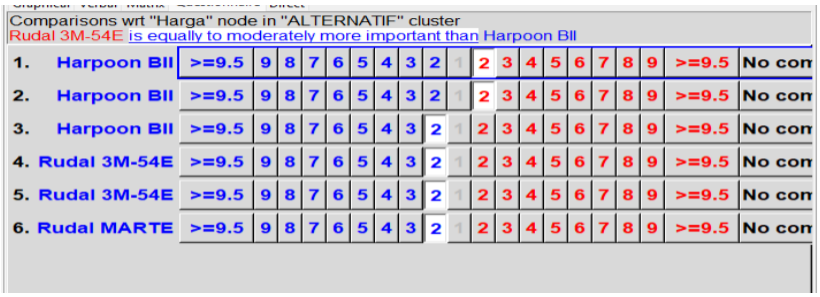

Figure 5. Pairwise Alternatives To Price

In the picture above is a pairwise comparison of all alternatives to the price. Alternative comparison between harpoon B-II with NSM missile, Harpoon BII with 3M-54E missile, Harpoon BII with MARTE MCDS missile, NSM missile with MARTE MCDS, NSM missile with 3M-54E missile, 3M-54E missile with MARTE. By carrying out the weighting of each alternative to the price, the results are obtained as shown in figure 6.

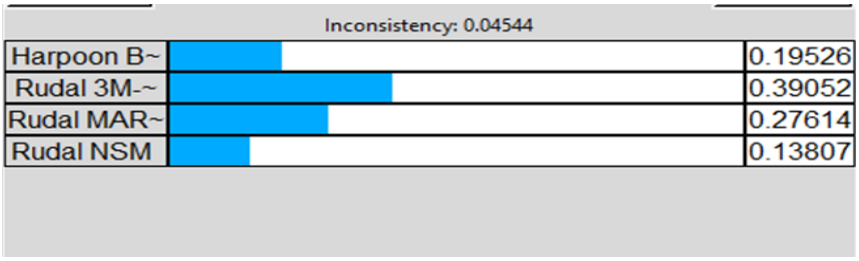

Figure 6. Pairwise Results Against The Price

In the analysis of missile selection based on the price creteria, the 3M-54E missile gets the highest weight with a value of 0.391, followed by the MARTE missile with a weight of 0.276, then the Harpoon missile with a weight of 0.195 and finally the NSM missile with a weight of 0.138. The data from the questionnaire results are entered into the super decision software in the form of a paired comparison matrix, and the inconsistency ratio value is calculated. In this case, the inconsistency value in figure 4.8 is 0.045, which is below the maximum value of inconsistency, so the result of the pairwise comparison answer is considered consistent.

4) Pairwise Comparison Reach Distance

Pairwise comparison by comparing alternatives to the range distance owned. There are 6 pairwise comparisons of all alternatives to range. Comparison of alternatives to the range distance between harpoon BII and NSM missiles, Harpoon BII with 3M-54E missiles, Harpoon BII with MARTE MCDS missiles, NSM missiles with MARTE MCDS, NSM missiles with 3M-54E missiles, 3M-54E missiles withMARTE.

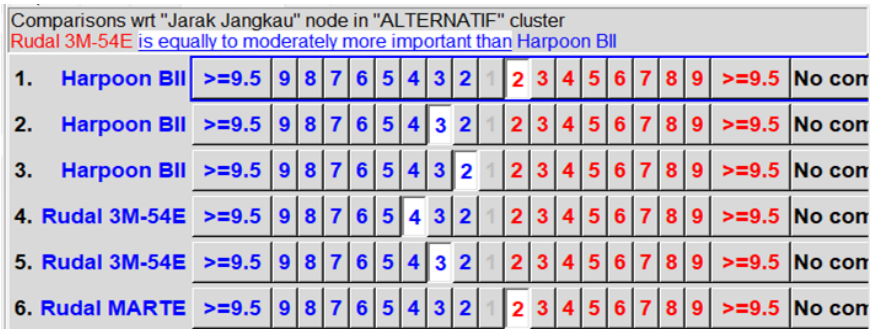

Figure 7. Pairwise Alternatives to Reach Distance

Weighting is carried out for the creteria of range range on alternative coastal defense missiles. The results showed that the highest value belonged to the 3M-54E missile with a weight of 0.467, followed by the Harpoon BII missile with a weight of 0.277, then the NSM missile with a weight of 0.16, and the MARTE missile with a weight of 0.095. In addition, the inconsistency value in figure 4.10 is 0.0116, which is below the maximum value of inconsistency. Therefore, pairwise comparison results are considered consistent.

5) Pairwise Comparison Sustainability Spare parts and Logistic

Pairwise comparison by comparing alternatives to sustainability spare parts and logistics owned. There are 6 pairwise comparisons as can be seen in the image below.

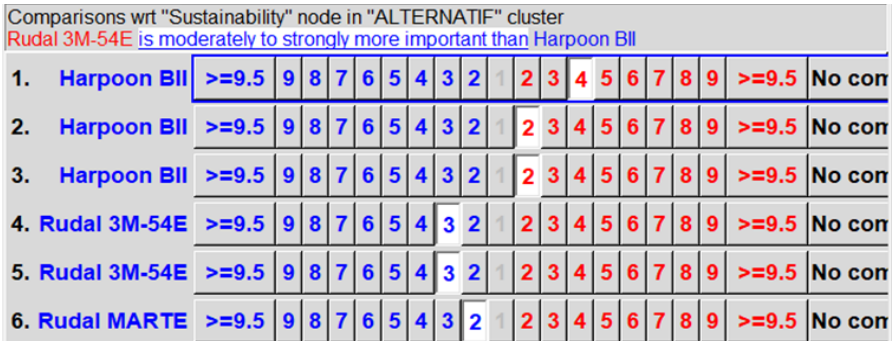

Figure 8. Pairwise Alternatives to Sustainability

Figure 8 above is a pairwise comparison of all alternatives to sustainability spare parts and logistics. Comparison of alternatives to sustainability between harpoon BII and Naval Strike Missile (NSM), Harpoon BII with 3M-54E missile, Harpoon BII with MARTE MCDS missile, Naval Strike Missile (NSM) with MARTE MCDS, Naval Strike Missile (NSM) with 3M-54E missile, 3M-54E missile with MARTE.

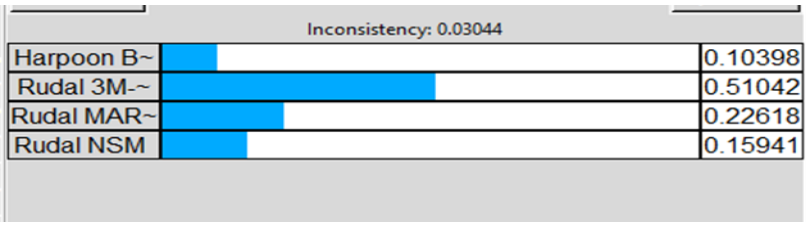

Figure 9. Pairwise Sustainability Spare and Logistics Results

With weighting on each alternative to sustainability and the results shown in figure 4.12. From these results, the highest value in Sustainability Spare parts and Logistics was the 3M-54E missile with a value of 0.51, followed by the MARTE missile with a weight of 0.226, the NSM missile with a weight of 0.159, and the Harpoon BII missile with a weight of 0.103. In addition, the inconsistency value in figure 4.16 is 0.0304, which is below the maximum inconsistency value of 0.1, so the result of the answer in the pairwise comparison above can be considered consistent.

g. Overall Priority Results

From the calculation results above, cumulative weight results are obtained on each alternative. The total weight of each alternative can be seen in figure 4.13.

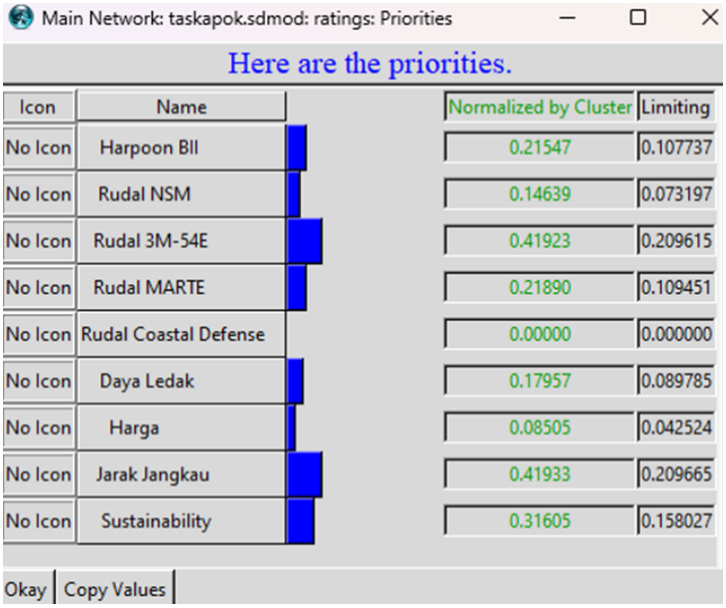

Figure 10. Final Score Of Missile Selection Weights

From the results of the weight calculation for each criterion, it was found that the 3M-54E missile from Russia has the highest score with a value of 0.419, because it has the longest range and good spare parts sustainability. The MARTE missile from France came in second with a score of 0.219, followed by the Harpoon B II missile from the USA with a score of 0.215, and the NSM missile from Norway with a score of 0.146. Therefore, the missile chosen for Indonesia's coastal defense is the 3M-54E missile because it meets the specified criteria and there are no political problems with Russia.

h. Alternatives.

Here are the alternative specifications of the missiles that will be used for Indonesia's coastal defense.

a. Naval Strike Missile (NSM) Coastal defense (Norway)

The NSM is an advanced missile that uses composite materials and has stealth capabilities. It weighs more than 400 kg and a range of more than 185 km. The missile is designed for coastal and offshore water scenarios, can hit targets at sea as well as on land. NSM can navigate using GPS, inertial reference systems and terrain. Each MLV carries four missiles and can connect to a network of up to 6 launchers with 24 missiles. When mounted on a ship, NSM can be installed in multiple launcher packs with the total weight of the equipment varying depending on the number of launchers.

b. 3M-54E Coastal Defence Anti-Ship Missile Russia

Club-M is a Russian coastal defense system that can attack enemy ships and has secondary ground attack capabilities. The system is based on the Belarusian heavy high mobility vehicle MZKT-7930 in an 8x8 configuration. Missiles that can be used in this system include 3M-54E, 3M-54E1, 3M-54KE, 3M-54KE1, and 3M-14E. The maximum range of such missiles is 220-300 km. The 3M-54E missile was developed from the 3M-10 anti-ship missile with a maximum cruise range of 220 km and is equipped with a 200 kg high-explosive warhead. The missile has active radar guidance with a maximum range of 65 km and can apply up to Sea State 6.

c. The MARTE mobile coastal defence system

The Marte MK2 anti-ship gun is a missile that can operate at supersonic speeds and in all weather conditions. Equipped with a semi-penetrating high-explosive warhead, the missile has fire-and-forget and sea skimming capabilities. The rocket variant of the Marte MK2/S helicopter is designed to equip warships or ground batteries and has a range of more than 30 km. The Malte ER anti-ship missile is the latest addition to the Maltese missile family and can be operated with Malte Mk2/S missiles. Marte ER rockets are powered by turbojet propulsion systems and have a range of more than 100 km as well as integrated into the NH90 NFH Maritime Helicopter.

Table 7. The Strength and Weakness of Missiles

NO	MISSILE NAME	WEAKNESS	STRENGHTH
1	NAVAL STRIKE MISSILE (NSM)	The cheapest price of all alternative missiles. The supersonic speed is 1.8 mach.	The range is less than 200Km. warhead capacity 200Kg. Not onboard in the truck so that mobility is low, Sustainability

			logistics is easily influenced by foreign policy.
2	3M-54E missile	Reach distance up to 300 Km, the farthest of all alternatives. Speed above supersonic i.e. 2.9 mach. sustainability logistics is old and complete. transported by high mobility truck	Warhead capacity 200 Kg.
3	Harpoon BII missiles	Reach Distance of about 220 Km. Warhead 227 Kg carried ditruck so that mobility is high	The subsonic speed is 0.8 mach.
4	MARTE missiles	The largest warhead among others is 310 Kg.	The subsonic speed is 0.9 mach. Reach distance only 100 Km. not onboard in truck so low mobility

Harpoon Block II is an anti-ship gun that has the ability to carry out ground attacks. The missile uses GPS-assisted inertial navigation to reach the aiming point of a specific target, with a 227 kg warhead that can provide lethal firepower against a variety of ground targets. In traditional anti-ship missions, precise navigation solutions are combined with improved launch systems to provide better identification of target ships. The Block II upgrade allows Harpoon missiles to have a high probability of hitting ships very close to land or navigating congested waterways.

i. Advantages and Disadvantages.

Indonesia prioritizes the use of air defense missiles to protect beaches and prioritizes long-range missiles. Therefore, the first step taken is to meet the specifications of long-range missiles that can cover longer distances. In addition to range, sustainability is an important factor to consider in choosing a missile, to ensure that it is not easily influenced by foreign policy and can function sustainably. There are several missile alternatives to consider, with each having its advantages and disadvantages to consider.

5. CONCLUSION

The linear regression method can be used to predict the military strength of neighboring countries based on their military budgets. In this study, it was found that the higher the military budget of a neighboring country, the greater their military strength. The obtained linear regression equation is Y = 253.952561 + 7.1855428X.

The AHP method is used to select the best alternative to coastal defense missiles by considering the criteria of range range, price, explosive power, and logistical sustainability. Based on the analysis, the best alternative would be the 3M-54E missile from Russia with a weight of 41.9%.

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