

Analysis of the Influence of Sewaco, Platforms and Bases on the Operational Capability of Submarines

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Abstract

Indonesia is an archipelagic country whose territory lies in a cross position between two continents and two oceans. The position of the centre of gravity owned by Indonesia makes the security level decrease to threaten Indonesia's sovereignty. The increasing escalation in the South China Sea area, marked by many manoeuvres of foreign warships from significant countries, does not rule out the possibility that submarines from foreign countries will participate in showing their war power. Faced with the vulnerabilities in Indonesia's territorial waters and the quantity of ownership of existing warships, especially submarines, it is necessary to research them. The hypothesis in this study is that if the capability of the rental co, platform and base increases, it will increase the operational capability of the submarine. The methodology used is descriptive quantitative using SPSS 25 software and Microsoft Excel 2013 with multivariate correlation data analysis techniques. The influence of the rental co, platform and base on the operational capability of the submarine is 59.8%. So that several factors that affect the submarine's ability to carry out operations are the rental co, platforms, and base facilities owned. These factors must be improved to carry out everyday operational tasks continuously.

Keywords

influence of sewaco; platforms; operational capability; submarines



I. Introduction

The dynamics of the strategic environment are essential in the existence of a country. This is because there are influences from the global, regional, and international spheres. However, the post-Cold War era dynamics experienced a paradigm shift regarding security from initially traditional security to non-traditional security. However, this shift does not change anything about the threats coming and being perceived. For Indonesia, sea defence development is a must due to several factors. Indonesia is an archipelagic state dominated by the ocean, and the projection of national development is focused on the World Maritime Axis.

The centre of gravity position in the Asia Pacific region owned by Indonesia decreases the level of security (Yanti, 2014). This position can threaten the sovereignty of Indonesia. Countries in East Asia depend on waters located in the East Asian region. The increasing sea traffic makes surveillance very difficult as it relates to the protection of the sea and traffic and piracy. According to the 2015 IMO Report, 90.40% of piracy occurred in Asian waters, 22% in Southeast Asian waters and 14% in South China waters (Sobaruddin et al., 2017).

Competing territorial claims in the South China Sea have led to repeated conflicts between China, Indonesia, Malaysia, the Philippines, Taiwan and Vietnam. Conventional diesel-electric submarines are owned by countries in Southeast Asia and Australia, smaller

and more capable than nuclear-powered submarines owned by the US Navy (Andersson, JJ2015).

The hypothesis is a quick answer to a problem and needs to be tested for truth with more complete and supporting data. This research was conducted to determine the effect of Sewaco, Platform and Base on Submarine Operational Capability. The following is the formulation of the hypothesis of this research:

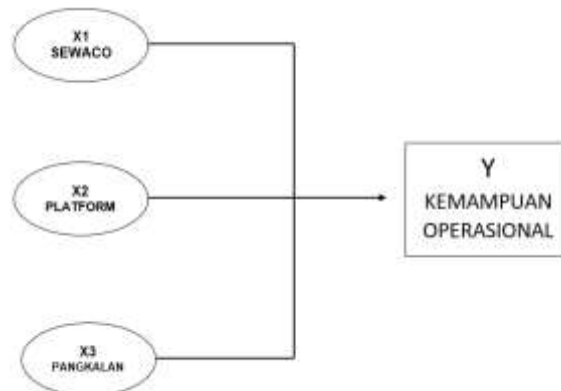


Figure 1. *The Formulation of Hypothesis*

II. Research Methods

This research uses a quantitative method with a survey design, in which the data in this study will be analyzed statistically with the help of SPSS. The result of the statistical data is to determine whether there is an influence between the variables in question. In survey design, researchers describe quantitatively (numbers) some tendencies, behaviours, or opinions of a population by examining a population sample (Creswell, 2016).

The survey design was carried out by distributing questionnaires or questionnaires. Based on the method and design of this research, the research was carried out using theories and concepts as a guide for researchers so that the research was directed. Then the phenomena in the field are compared so that problems arise, identify problems and limit problems by making hypotheses as evidence. Conduct hypothesis testing by distributing questionnaires, analyzing the data obtained with statistics, and after knowing the results are juxtaposed with theories to be analyzed, analyzed and discussed, and finally draw conclusions.

III. Results and Discussion

3.1 Results

Multiple linear regression analysis was used to make an equation between the variables rental co (X1), platform (X2) and base (X3) with operational capability variable (Y). In addition, multiple linear regression analysis is also used to see the relationship between the variable rental co (X1), platform (X2) and base (X3) together with the Operational variable ability (Y). Below is paired data for variables X1, X2 and X3 with Y. The results of the multiple linear regression analysis between the variables X1, X2 and X3 against Y with the SPSS program, can be seen in Table 1 below:

Table 1. Sewaco Multiple Linear Regression Test Results (X1), Platform (X2) and Base (X3) on Operational Capability (Y)

Coefficients								
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	4.607 0.229	1.055			(Constant)	0.819		
	Sewaco	4.098	0.070	0.325	0.288	0.000	0.797	1.255
	Platform	0.422 5.3850. 818 1.223	0.070			0.000		0.379
	Base	0.1043. 1940.7 49		0.262		0.002	0.331	1.335
a. Dependent Variable: Operational Ability								

Source: Data processed by researchers using SPSS

The multiple linear regression formula is $Y = a + b_1X_1 + b_2X_2 + b_3X_3$. Y is an effect variable a is a constant, b is a regression coefficient, X1, X2 and X3 are causal variables. Based on the results of the regression test in table 1, Y is the operational ability variable, $a = 1.055$, $b_1 = 0.288$, $b_2 = 0.379$, $b_3 = 0.331$. While X1 is the rental variable, X2 is the platform variable, and X3 is the base. So the form of a simple linear regression equation is $Y = 1.055 + 0.288X_1 + 0.379X_2 + 0.331X_3$.

Correlation coefficient analysis was used to determine the level of closeness of the relationship between the variables rental co (X1), platform (X2) and base (X3) together with the variable operational ability (Y). The results of the correlation coefficient between the variables X3 to Y can be seen in Table 4.35 below:

Table 2. Multiple Correlation Coefficient Sewaco (X1), Platform (X2), and Base (X3) on Operational Capability(Y)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1,	.773 ^a	0.598	0.583	3.534
a. Predictors: (Constant), Base, Platform, Sewaco				
b. Dependent Variable: Operational Ability				

Source: processed by researchers using SPSS

The relationship between the variables Sewaco (X1), platform (X2) and base (X3) with Operational ability can be seen from the R-value, which shows a correlation. If the R-value is close to 1, then the relationship between the rental co, platform and base variables with operational capabilities is getting stronger. Meanwhile, to determine the level of significance between the variables Sewaco (X1), platform (X2) and base (X3) with operational capability

(Y), which means that there is a significant relationship between the variables. In table 2, the R-value is 0.773. This means that the correlation is classified as vital, and there is a positive relationship, which means that the relationship between the variables rental co (X1), platform (X2) and base (X3) has a significant relationship together with the operational ability (Y).

Analysis of the coefficient of determination R Square is used to find out how much the value of Sewaco (X1), platform (X2) and base (X3) together affect operational capability (Y). The results of the intermediate determination coefficient can be seen in table 2, where R Square is 0.598. This means that the contribution or contribution of the influence of the variables from Sewaco (X1), platform (X2) and base (X3) together to Operational capability (Y) is 59.8%. In contrast, the rest is influenced by other variables not calculated in this study.

This discussion consists of two hypotheses, namely H0, the rental variable (X1), platform (X2) and base (X3) together do not have a direct positive effect on operational capability (Y). While H1, the variables of rental co (X1), platform (X2) and base (X3) together have a direct positive effect on operational capability (Y). The provisions of the hypothesis test are if $F_{count} > F_{table}$, then H0 is rejected. This shows that Sewaco (X1), platform (X2) and base (X3) have a direct and significant effect on operational capability (Y). Meanwhile, if $F_{count} \leq F_{table}$, then H0 is accepted. This shows that Sewaco (X1), platform (X2) and base (X3) together have a direct and significant effect on operational capability (Y). F calculation results arithmetic with SPSS program can be seen in Table 3 below:

Table 3. Test Results of F

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1486,574	3	495,525	39,672	000 ^b
	Residual	999,236	80	12,490		
	Total	2485,810	83			
a. Dependent Variable: Operational Capability						
b. Predictors: (Constant), Bases, Platform, Sewaco						

Source: Data processed by researchers using SPSS

Based on table 3, the calculated F value is 39.672 and F Table at a significance level of 5% and degrees of freedom (df) = nk-1, where k is the independent variable is 3. So that $df = nk-1 = 84-3-1 = 80$ so that the F table is 3.111. So, based on these calculations, it is obtained that $F_{count} = 39.672 > F_{Table} = 3.111$, which means that H0 is rejected and H1 is accepted. So it can be concluded that Sewaco (X1), platform (X2) and base (X3) together have a direct and significant effect on operational capability (Y).

3.2 Discussion

The Development of the Navy's strength focuses on the strength structure through the Integrated Fleet Weapon System (SSAT), which consists of ships, aircraft, marines, and bases. While the Naval Base itself has the main task of carrying out administration and logistics for elements of the Navy (Ships, Pesud and Marines) and carrying out potential maritime development by utilizing the facilities and infrastructure owned by the base itself and related. In addition, the duties and functions of a Naval Base are to provide anchorage, docking and logistical support services for elements of the KRI or the Indonesian Navy Pesud. They stop by while carrying out operational and training tasks (Soleh HP. 2017).

The needs for warships can undoubtedly support the performance of the Navy to carry out its military operations. With technological advances in the shipping sector, innovations in hull design and construction and propulsion of high-speed vessels are interesting to study its hydro-elastic characteristics. Low fibre ships will reduce the total drag, which is related to the size of the ship's engine and fuel consumption. The power system on a warship is a system that supports the operation of a warship. The power system on warships consists of 2 power systems: the ship propulsion system and the ship's electric power system. Currently, the power system on the ship is supported by diesel engines, namely the main engine / main engine and auxiliary engine (Rinna Hariyati., 2017). In a diesel engine, fuel energy is converted into mechanical energy by the combustion process in the engine itself. Indonesia is one of the oil-producing countries in the world, but until now it still imports fuel oil (BBM). Biodiesel from vegetable oil is an alternative fuel specially formulated for diesel engines (Ogolmagai in Suwarno, 2021). The following are five stages in implementing the target costing method according to Rudianto in Palulun (2021) including determining selling prices based on market prices, determining profil targets, determining cost targets, conducting value engineering, and using kaizen costing which aims to eliminate production activities that inefficient and controlling operations. In general, small industries use simple technology where the process is done manually, so that the small industries have the characteristics of labor intensive. Workers employed in small industries usually do not require higher education levels, but more rely on skills. Thus small industries will be easier to recruit large numbers of workers, which means they can participate in reducing the unemployment (Pasaribu, 2021).

Furthermore, in this study, several factors will affect operational capabilities, namely, platforms and bases. The influence of the two independent variables above also affects the results of increasing submarine operational capabilities.

IV. Conclusion

Based on the results of the research and discussion, it can be concluded that the correlation coefficient of the rental co (X1), platform (X2) and base (X3) variables together has a solid and positive relationship with operational capability (Y) of 0.818. In addition, hypothesis testing also shows that there is a direct and significant effect between rental co (X1), platform (X2) and base (X3) together with operational capability (Y), which is shown in the results $T \text{ Count} = 39.672 > F \text{ Table} = 3,11$, means that Sewaco, platform and base together have a direct positive effect on operational capability. The results of the coefficient of determination for Sewaco (X1), Platform (X2) and Base (X3) together contributed 59.8% to Operational Capability (Y).

Submarines are strategic weapons that are a significant need for Indonesia in playing a leadership role in regional maritime security to deal with various threats. Several factors that affect the ability of submarines to carry out operations are the rental co, platforms, and base facilities owned. These factors must be improved to carry out the scheduled operational tasks continuously. As mentioned in the calculation results in this study, the contribution of these three factors provides 59.8% of operational capability, and the rest is influenced by other factors that are not calculated in this study. So to improve operational capabilities, it can be done by increasing one or three of these factors.

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