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The Impact of Modernizing the Indonesian Navy's Main Weapon Systems on Indonesia's Maritime Resilience

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ABSTRACT

This study aims to analyze the impact of modernizing the Indonesian Navy's main weapons systems (Alutsista) on Indonesia's maritime resilience. Using a descriptive quantitative method, data were collected from 33 respondents with experience in maritime defense. The study measured respondents' assessments of defense system modernization and maritime security through a survey and analyzed the data using cross-tabulation. The results show that the majority of respondents support defense system modernization, with 69.7% strongly agreeing and 27.3% agreeing. Similar assessments are observed regarding maritime security, where 69.7% of respondents strongly agree and 27.3% agree that maritime security is a crucial priority. Cross-tabulation analysis reveals a significant relationship between support for defense system modernization and positive views on maritime security (P-Value = 0.00). In conclusion, defense system modernization has a significant positive impact on Indonesia's maritime resilience. These findings have important implications for national defense policy, particularly in efforts to enhance maritime capability and stability through the modernization of the Indonesian Navy's defense and weapon systems.

1. Introduction.

As the world's largest archipelagic nation, Indonesia has recognized the importance of its maritime areas and has taken steps to strengthen its maritime infrastructure in recent years, such as through the implementation of the Sea Toll program (Hudaya & Putra, 2018). However, one crucial aspect of maritime resilience that has not received as much attention is the modernization of Indonesia's main naval weapon systems, known as Alutsista (Listiyono et al., 2021). Indonesia's vast maritime territory, which encompasses thousands of islands and critical sea lanes (Sebastian et al., 2015), underscores the essential role played by Alutsista or main weapon systems in safeguarding maritime security interests and territorial sovereignty (Morris & Paoli, 2018; Hermawan et al., 2021).

In 2014, the Indonesian government established defense policy as a pillar of the global maritime axis, making it a priority in maritime governance (Chairil, 2024). Modernizing defense and weapon systems is crucial for enhancing the Indonesian Navy's ability to manage its vast maritime territory (Sulistiyanto et al., 2017). Unfortunately, despite efforts by the Indonesian Navy to improve both the quantity and quality of its defense and weapon systems through various procurement and modernization programs, much of the existing equipment remains outdated and suffers from functional degradation (Haryanto, 2017). Therefore, this article will analyze the extent to which the modernization of the Indonesian Navy's defense and weapon systems has impacted Indonesia's ability to maintain maritime resilience and achieve its ambition of becoming a global maritime axis (Haryanto, 2017; Darma, 2019).

The inadequate condition of defense and weapon systems (Amarilla & Saputro, 2022) limits the Indonesian Navy's ability to secure Indonesia's maritime territory (Darma, 2019). The

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presence of non-traditional threats, such as territorial disputes in the South China Sea, piracy, and maritime terrorism, further emphasizes the need for modernization of defense and weapon systems to enhance the Navy's capabilities (Chairil, 2024). Additionally, this article will also consider the potential impact of meeting the Minimum Essential Force (MEF) requirements on regional security (Gindarsah & Priamarizki, 2021), as part of the efforts to improve Indonesia's maritime resilience.

The modernization of the Indonesian Navy's defense and weapon systems is crucial not only for maintaining Indonesia's maritime sovereignty and security but also for realizing the government's vision of transforming Indonesia into a global maritime axis (Hudaya & Putra, 2018). Additionally, the modernization of defense and weapon systems has the potential to positively impact regional welfare (Priadi, 2022), given the Indonesian Navy's role in ensuring maritime security and the smooth operation of maritime navigation and trade (Arif & Kurniawan, 2017). Effective maritime security will open up broader economic opportunities for communities in Indonesia's coastal regions, particularly those dependent on maritime navigation and trade (Haryanto, 2017).

In summary, this article will examine how the modernization of the Indonesian Navy's defense and weapon systems can have a significant impact on Indonesia's maritime resilience and efforts to establish Indonesia as a global maritime power capable of playing a crucial role in the region and the world. The importance of modernizing defense and weapon systems to support the development of Indonesia's maritime strength will be comprehensively discussed in this article.

2. Literature Review.

Indonesia has long recognized the importance of strengthening maritime infrastructure and capabilities to support its aspirations as a global maritime axis (Gai et al., 2019). To this end, the Indonesian government has undertaken various initiatives and strategic programs, such as the Sea Toll Program, aimed at improving connectivity and accessibility in Indonesia's maritime regions (Syahrin, 2018). However, beyond infrastructure and connectivity, efforts to enhance Indonesia's maritime resilience also encompass defense and security dimensions, particularly regarding the modernization and strengthening of the Indonesian Navy's defense and weapon systems (Supriatma, 2013).

The importance of modernizing the Indonesian Navy's defense and weapon systems to support Indonesia's maritime resilience has been discussed in several reviewed literatures. As discussed in the study by Darma (2019), the strategy for deploying the Indonesian Navy's forces to maintain maritime security includes two main aspects: force deployment and force employment (Darma, 2019). Additionally, other studies emphasize that within the framework of Indonesia's global maritime axis, there is a need to maintain synergy between economic and maritime security aspects (Meliala et al., 2024). In this context, the Indonesian Navy's efforts to combat illegal fishing represent both a defense policy and an effort to uphold Indonesia's territorial sovereignty.

Furthermore, studies examining the role of the Indonesian Navy base in Lampung also indicate that, in addition to maintaining security, the Indonesian Navy plays a role in empowering coastal communities through various rehabilitation programs and maritime resource-based economic development (Rumambi, 2023). Thus, modernizing the Indonesian Navy's defense and weapon systems is not only crucial for strengthening maritime defense and security but can also provide economic benefits to coastal communities.

3. Research Methods.

This study employs a quantitative research method, as it allows for objective measurement and statistical analysis of the variables under investigation. The quantitative approach provides a clear picture of the impact of modernizing the Indonesian Navy's defense and weapon systems on Indonesia's maritime resilience through hypothesis testing and numerical data processing. The focus of the research is on analyzing the effect of defense system modernization on Indonesia's maritime resilience. The sample and population for this study consist of the planning staff of the Indonesian Navy Marine Corps. Sampling is determined using the consecutive sampling technique, which allows researchers to select respondents sequentially as they come to the Indonesian Navy Marine Corps, thereby maximizing the chance of obtaining complete data. Additionally, the consecutive sampling technique minimizes bias in sample selection, as all respondents who visit the Indonesian Navy Marine Corps have an equal opportunity to be included in the study.

The primary data used in this study are the results of questionnaires administered to respondents. The number of respondents, obtained through consecutive sampling, is 33. Secondary data come from documents related to the modernization of the Indonesian Navy's defense and weapon systems and Indonesia's maritime resilience policies.

The questionnaire for this research contains items on respondents' perceptions of the modernization of the Indonesian Navy's defense and weapon systems and its impact on Indonesia's maritime resilience. The measurement scale uses a Likert scale ranging from 1 to 5 (strongly disagree to strongly agree). Validity and reliability tests are conducted to ensure that the data collected are suitable for analysis. Validity is assessed by comparing the table value of r and the calculated r value, where a Sig. value < 0.05 (Sihombing, 2014) indicates that the indicator items are valid. Reliability is assessed using Cronbach's Alpha, where a value < 0.7 (Nurjannah & Warsini, 2016) indicates acceptable reliability. Below are some valid and reliable items of the research variables:

3.1. Independent Variable.

The independent variable in this study is the modernization of the Indonesian Navy's defense and weapon systems, which is measured through indicators such as: To what extent do you agree that defense system modernization has enhanced the capabilities of the Indonesian Navy? How would you assess the quality of the modernized defense and weapon systems? And

do you feel safer with the modernization of the defense and weapon systems?

3.2. Dependent Variable.

The dependent variable is Indonesia's maritime resilience, which is measured through indicators such as: To what extent do you agree that defense system modernization improves early threat detection capabilities?; How would you assess the Indonesian Navy's response to maritime threats after defense system modernization?; and Do you believe that defense system modernization has enhanced the stability of Indonesia's maritime security?. The data obtained will be processed using SPSS software to analyze the impact of defense system modernization on Indonesia's maritime resilience.

The analysis technique used is Chi-Square analysis to test the hypothesis regarding the impact of modernizing the Indonesian Navy's defense and weapon systems on Indonesia's maritime resilience. Data processing is performed using SPSS software. If the p-value is less than 0.05, it can be concluded that there is a significant impact of defense system modernization on Indonesia's maritime resilience.

4. Results And Discussion.

To begin the Results and Discussion section of this study, it is essential to provide a comprehensive overview of the respondents' profiles and their assessments of the topics discussed. This research aims to explore and analyze respondents' perspectives on defense system modernization and its impact on maritime security.

4.1. General Description of Respondents.

First, we will discuss the general description of the respondents, including the frequency distribution based on age and length of service. Understanding these demographic characteristics provides a foundation for identifying any patterns that may emerge in respondents' assessments of the key issues to be discussed.

Table 1: Frequency Distribution of Respondents Based on Age.

Respondents	Mean	median	Standard Deviation	Min-Max	95 % CI
Age	46.48	46.00	3.13	40.00 - 53.00	45.3737 - 47.5960

*n= samples.

Source: Primary Data 2024.

From Table 1, it can be seen that the average age of respondents (mean) is 46.48 years, with a median age of 46.00 years. The age dispersion among respondents is measured by a standard deviation of 3.13, indicating relatively small variation in age. The age range of respondents is from 40.00 to 53.00 years, suggesting that all respondents are within a fairly homogeneous age group. The 95% confidence interval (95% CI) for the average age is between 45.3737 and 47.5960 years, providing confidence that the true average age of the population is likely within this range.

Table 2: Frequency Distribution of Respondents Based on Length of Service.

Respondents	Mean	median	Standard Deviation	Min-Max	95 % CI
LENGTH OF SERVICE	24.75	24.00	3.57	18.00 - 31.00	23.4883 - 26.0269

*n= samples.

Source: Primary Data 2024.

From Table 2, it can be observed that the average length of service for respondents (mean) is 24.75 years, with a median value of 24.00 years. The standard deviation of 3.57 indicates variability in the length of service among respondents. The length of service ranges from 18.00 to 31.00 years, reflecting a broad range of experience among the respondents. The 95% confidence interval (95% CI) for the average length of service is between 23.4883 and 26.0269 years, suggesting that the true average length of service for the population is likely within this range.

4.2. Description of Respondents' Answers on Defense and Weapon Systems Modernization and Maritime Security.

This section will describe respondents' answers regarding defense system modernization and maritime security. By examining the frequency distribution of respondents' assessments, we can gain insights into their overall views on these two aspects.

Table 3: Frequency Distribution of Respondents' Assessments of Defense and Weapon Systems Modernization.

No	DEFENSE AND WEAPON SYSTEMS MODERNIZATION	n	%
1	Disagree	1	3.0%
2	Agree	9	27.3 %
3	Strongly Agree	23	69.7%
	Total	33	100.0 %

*n= samples.

Source: Primary Data 2024.

From Table 3, it is evident that the majority of respondents have a positive view of defense system modernization. Specifically, 69.7% of respondents strongly agree with defense system modernization, indicating strong support for this initiative. Additionally, 27.3% of respondents agree with the modernization, suggesting that most respondents view it positively. Only 3.0% of respondents disagree, indicating minimal resistance or disagreement regarding defense system modernization.

From Table 4, it is evident that the majority of respondents have a very positive view of maritime security. Specifically, 69.7% of respondents strongly agree that maritime security is important, indicating a high level of concern and support for efforts to maintain maritime security. Additionally, 27.3% of

Table 4: Frequency Distribution of Respondents' Assessments of Maritime Security.

No	MARITIME SECURITY	n	%
1	Disagree	1	3.0%
2	Agree	9	27.3 %
3	Strongly Agree	23	69.7%
Total		33	100.0 %

*n= samples.

Source: Primary Data 2024.

respondents agree with this view, reflecting a positive perspective, though not as strong as the previous group. Only 3.0% of respondents disagree, demonstrating minimal resistance or disagreement regarding the importance of maritime security among the respondents.

4.3. Cross-Tabulation between Assessments of Defense and Weapon Systems Modernization and Maritime Security.

To deepen the analysis, a cross-tabulation between assessments regarding defense and weapon systems modernization and maritime security will be presented. This analysis will help identify the relationship between these two variables and determine how defense and weapon system modernization may influence respondents' perceptions of maritime security. This section will provide a clear overview of the research findings and facilitate a thorough discussion on the implications of these findings.

From Table 5, it can be observed that respondents who disagree with defense system modernization (3.0%) also disagree with the importance of maritime security. In contrast, respondents who agree with defense system modernization show varied distribution: 21.2% agree with the importance of maritime security, and 6.1% strongly agree. The most significant finding is among respondents who strongly agree with defense system modernization. From this group, 63.6% also strongly agree that maritime security is important, while an additional 6.1% only agree. Overall, the data indicates that the majority of respondents who support defense system modernization tend to hold a very positive view of maritime security. The P-Value of 0.00, which is less than the significance level (Sig < 0.05), demonstrates a significant relationship between defense system modernization and assessments of maritime security among respondents. This supports the hypothesis that defense system modernization positively influences Indonesia's maritime resilience.

4.4. Modernization of Defense and weapon systems and Maritime Security in Indonesia.

In this study, various findings from the data analysis provide a comprehensive overview of respondents' views on defense system modernization and maritime security. This discussion summarizes and analyzes the key findings from the presented tables, and how these findings support the research hypothesis regarding the impact of defense system modernization on Indonesia's maritime resilience.

The findings from the general description of the respondents indicate that the participants in this study have an average age of 46.48 years and an average length of service of 24.75 years. This relatively high age and extensive work experience suggest that the respondents possess substantial knowledge and insights related to maritime defense issues, particularly concerning defense and weapon systems and maritime security. This adds further validity to the respondents' assessments within the context of this research.

The majority of respondents (69.7%) strongly agree that the modernization of defense and weapon systems is an essential step. This indicates strong support for modernization efforts aimed at enhancing the effectiveness and capabilities of the Indonesian Navy. Only 3% of respondents disagreed, suggesting that resistance to these changes is minimal. The substantial support for defense system modernization is likely influenced by the respondents' experiences and insights into the security challenges faced by Indonesia, particularly in the maritime domain. Similar findings were observed in the assessment of maritime security, where 69.7% of respondents strongly agreed on the importance of maritime security, and an additional 27.3% agreed. This reflects a high level of awareness among respondents about the significance of maintaining and enhancing maritime security as part of the national defense strategy. Like the assessment of defense system modernization, only 3% of respondents disagreed with the importance of maritime security.

Regional maritime security initiatives, such as the Regional Maritime Security Initiative (RMSI) and joint patrols, have become central to efforts in safeguarding Indonesia's maritime security (Zulkifli & Musa, 2022; Poonnawatt, 2023). The modernization of the Indonesian Navy's defense and weapon systems has garnered strong support within the Marine Corps, reflecting an increased awareness of the importance of maritime security. This is evident from survey results, which show that the majority of respondents strongly agree on the importance of modernizing defense and weapon systems and maintaining maritime security. This support is driven by the understanding that maritime threats are becoming increasingly complex, necessitating swift and effective responses. Regional cooperation initiatives such as the Malaysia, Indonesia, and Singapore (MALSINDO) alliance, the Eyes-in-the-Sky (EiS) program, the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships (ReCAAP), and the Trilateral Maritime Patrol (TMP) are also considered crucial for maintaining maritime stability in the region. Furthermore, efforts to reduce maritime competition between superpowers and resolve territorial disputes are key to ensuring Indonesia's maritime security (Zulkifli et al., 2020).

The cross-tabulation between the assessment of defense and weapon system modernization and maritime security shows a highly significant relationship. Among the respondents who strongly agree with the modernization of defense and weapon systems, a large majority (63.6%) also strongly agree that maritime security is important. This indicates that those in the Indonesian Navy who support defense and weapon systems mod-

Table 5: Cross-Tabulation between Assessments of Defense and Weapon Systems Modernization and Maritime Security.

No	DEFENSE AND WEAPON SYSTEMS MODERNIZATION	MARITIME SECURITY						Total		P-Value (>Sig-0,05)
		Disagree		Agree		Strongly Agree				
		n	%	n	%	n	%	n	%	
1	Disagree	1	3,0 %	0	0,0%	0	0,0 %	1	3,0 %	0,00
2	Agree	0	0,0%	7	21,2%	2	6,1%	9	27,3%	
3	Strongly Agree	0	0,0%	2	6,1%	21	63.6%%	23	69.7%	
	Total	1	3,0%	9	27,3%	23	69.7%%	33	100.0%	

*n= samples.

Source: Primary Data 2024.

ernization tend to have a high awareness of the need for maritime resilience. According to Prayitno et al. (2021), this awareness is reflected in the improvements made to the 2020-2024 Minimum Sssential Force policy, which has been optimized to enhance the Indonesian Navy's capability in carrying out its mission to protect Indonesian national interests at sea.

A P-Value of 0.00, which is smaller than the significance level (Sig < 0.05), indicates a significant effect between the assessment of defense and weapon system modernization and maritime security. In other words, support for the modernization of defense and weapon systems is directly related to a positive view of maritime security. This finding supports the hypothesis that the modernization of defense and weapon systems positively influences Indonesia's maritime resilience. This aligns with the research of Komalasari and Mustafa (2023), which reveals that defense and weapon system modernization has a significant impact on Indonesia's maritime defense in the Asia-Pacific region, considering the vast maritime territory and complex geopolitical dynamics.

The modernization of the Indonesian Navy's defense and weapon systems not only receives strong support from defense professionals but also has a significant impact on enhancing Indonesia's maritime resilience. This support is driven by a deep understanding of the importance of maritime security in facing increasingly complex regional and global challenges. Therefore, the continuation of the defense and weapon systems modernization program is crucial in national defense strategy, aligning with the evolving geopolitical dynamics of the region.

Conclusions.

Based on the findings above, it can be concluded that there is strong support among respondents for the modernization of defense equipment and the importance of maritime security. Additionally, the significant relationship between these two variables indicates that the modernization of defense equipment is seen as a crucial element in strengthening Indonesia's maritime resilience. These findings have important implications for national defense policy, where the enhancement of the Indonesian Navy's defense and weapon systems can significantly contribute to Indonesia's maritime security and stability. In the context of defense policy and strategy, this research can serve as a foundation for continuing to promote the modernization of defense equipment, with the ultimate goal of enhancing maritime resilience and protecting national interests in Indonesian waters.

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