Journal of Infrastructure, Policy and Development 2024, 8(12), 6467.
https://doi.org/10.24294/jipd.v8i12.6467

Article

Analysis of the determinants of success of maritime security and resilience strategies moderated by risk management and resources multiplier in the Indonesia's Archipelagic Sea Lane II

Abdiyan Syaiful Hidayat[1,*], Moh. Khusaini[2], Aan Eko Widiarto[3], Solimun Solimun[4]

[1] Resilience Studies Doctoral Program, Brawijaya University, Jawa Timur 65145, Indonesia
[2] Faculty of Economics and Business, Brawijaya University, Jawa Timur 65145, Indonesia
[3] Faculty of Law, Brawijaya University, Jawa Timur 65145, Indonesia
[4] Faculty of Mathematics and Science, Brawijaya University, Jawa Timur 65145, Indonesia
*** Corresponding author:** Abdiyan Syaiful Hidayat, abdiyansh50@gmail.com

CITATION

Hidayat AS, Khusaini M, Widiarto AE, Solimun S. (2024). Analysis of the determinants of success of maritime security and resilience strategies moderated by risk management and resources multiplier in the Indonesia's Archipelagic Sea Lane II. Journal of Infrastructure, Policy and Development. 8(12): 6467.
https://doi.org/10.24294/jipd.v8i12.6467

ARTICLE INFO

Received: 17 May 2024
Accepted: 5 July 2024
Available online: 30 October 2024

Abstract: Indonesia has ratified United Nations Convention on the Law of the Sea 1982 (UNCLOS 1982) through Law No. 17 of 1985 concerning the ratification of the 1982 Law of the Sea Convention, thus binding Indonesia to the rights and obligations to implement the provisions of the 1982 convention, including the establishment of the three Northern-Southern Indonesia's Archipelagic Sea Lane (ALKI). The existence of the three ALKI routes, including ALKI II, has led to various potential threats. These violations not only cause material losses but, if left unchecked and unresolved, can also affect maritime security stability, both nationally and regionally. The maritime security and resilience challenges in ALKI II have increased with the relocation of the capital, which has become the center of gravity, to East Kalimantan. The research in this article aims to identify and analyze the factors influencing the success of maritime security and resilience strategies in ALKI II. The factors used in this research include conceptual components, physical components, moral components, command and control center capabilities, operational effectiveness, command and control effectiveness, and the moderating variables of resource multiplier management and risk management to achieve maritime security and resilience. This study employed a mixed-method research approach. The factors are modeled using Structural Equation Modeling (SEM) with WarpPLS 8.0 software. Qualitative data analysis used the Soft System Methodology (SSM). The results of the study indicate that the aforementioned factors significantly influence the success of achieving maritime security and resilience in ALKI II.

Keywords: determinants of success; maritime security and resilience strategy; risk management; resources multiplier; Indonesia's Archipelago Sea lane II

1. Introduction

Indonesia is the sole archipelagic nation to have designated specific sea lanes within its waters. The Indonesian archipelago features three main sea lanes—ALKI-I, ALKI-II, and ALKI-III—that run north to south and vice versa. These three ALKIs simplify navigation by regulating the passage rights of foreign ships and aircraft through Indonesia's extensive and numerous entry points. However, the opening of ALKI certainly opens up opportunities for various security consequences in Indonesian waters.

Among the designated Indonesia's Archipelagic Sea Lane (ALKI), ALKI II stands out as an area with significant potential for infractions that could involve interference from other nations. ALKI II spans from the Sulawesi Sea, through the

Makassar Strait and Lombok Strait, extending to the Indian Ocean. This sea lane serves as a crucial and efficient route for maritime transport, connecting Indonesia's western and eastern regions swiftly and safely. It offers an alternative to the congested Strait of Malacca. Notably, ALKI II is also adjacent to Indonesia's prospective new capital in East Kalimantan, which is planned to replace Jakarta as the archipelago's administrative center, as per the National Capital Law No. 2022 and its amendment under Law No. 21 of 2023. Insecurity in ALKI II includes the impact of the Ambalat Block conflict, which has the potential to use ALKI II for the military interests of certain countries, illegal fishing and use of natural resources, smuggling of goods, and human trafficking (Soedewo, 2015). In addition, regarding Poso terrorism, the waters on the border of Indonesia and the Southern Philippines are areas that are vulnerable to the flow of global terrorism actors (Bakamla, 2018). The consequences of violations are not only material losses; even if these are allowed to continue and not immediately addressed, they can affect national and regional stability, security, and resilience. Thus, it is necessary to formulate the right strategy for realizing maritime security and resilience in ALKI II.

The Second Fleet Command is an integral part of the Indonesian Navy, which serves as the main component of national defense at sea based on the provisions of Article 9 of Law No. 34 of 2004 of the Republic of Indonesia. It plays a significant role and is obliged to maintain the territorial integrity of the Republic of Indonesia. Second Fleet Command, Indonesian Navy has an essential role in carrying out sea control in ALKI II in accordance with the tasks carried out and work areas responsible for realizing maritime security and resilience. The Second Fleet Command carries out sea control in ALKI II through the ALKI II Security Joint Task Command (Kogasgab Pam ALKI II) to realize maritime security and resilience. In carrying out its duties, Koarmada II deploys the strength of the Republic of Indonesia Ship (KRI) and aircraft, which are physical components supported by moral and conceptual components, as resources (means) for implementing maritime security and resilience strategies. Success in implementing the strategy is determined by several factors, including conceptual components (KSL), physical components (FSK), moral components (MRL), command and control center capabilities (PKL) as means, operational effectiveness (EOP), and command and control effectiveness (CCE) as ways, as well as guaranteed security and the realization of maritime resilience in ALKI II as a goal (ends). In addition, there are risk management factors (RM) and resource multiplier (MRM) management as moderation to strengthen the relationship of ways to goals (end).

This study aims to identify and analyze the factors that determine the success of maritime security and resilience strategies in the sea lanes of Indonesia. The theory used to analyze and examine the factors that determine the success of maritime security and resilience strategies is the theory of strategy by Andrew J. Good Paster's strategy is the science and art/way (Ways) of how to use the means/potential (Means) available to achieve goals (Ends) that are predetermined (Nelson, 2016, p. 34). The determining factors in art/ways (ways) are described using the theory of sea control by Milan Vego and network-centric warfare theory by David S Albert. The determinants of resources (means) are described using the theory of fighting power by Geoffrey Till, human resource management by Marcu, and network-centric warfare.

The end factor is defined using maritime security theory by Christian Buerger and Geoffrey Till and maritime toughness by Svitkova, Anholt, and Omer. In addition to the strategy's ways, means, and objectives, there are two additional variables, such as moderation variables, that have yet to exist in previous studies: resource multiplier management and risk management. Thus, a comprehensive strategy was obtained to respond to maritime security and resilience challenges in ALKI II.

2. Literature review

2.1. Security and resilience strategy in maritime

Maritime security and resilience strategy is a systematic effort designed to protect waters and maritime infrastructure from various threats, as well as to ensure the ability to withstand and recover from adverse incidents. This strategy involves a combination of policies, technologies, and operational actions aimed at identifying, preventing, responding to, and addressing various security challenges in the maritime environment.

According to research by Bateman (2018), multilateral collaboration and the role of international institutions are crucial in developing effective strategies to face global threats in international waters. Bateman emphasizes that regional and international cooperation can strengthen maritime security through information exchange, joint exercises, and combined operations.

Moreover, advanced technology plays a critical role in maritime security strategy. Research by Yang and Sia (2020) discusses the importance of using technologies such as surveillance and early detection systems to enhance the ability to identify and respond to maritime threats, including illegal fishing, smuggling, and other illegal maritime activities. These technologies enable more effective monitoring and quick response to emerging threats.

Maritime security and resilience strategies must also include a comprehensive approach to risk management and operational capacity enhancement. By adopting prevention-oriented and rapid response strategies, countries can ensure better protection of their maritime interests and minimize the impact of adverse incidents.

Overall, maritime security and resilience strategies are not only crucial for protecting a country's national interests but also for promoting regional and global stability. An integrated approach and the use of advanced technologies can enhance the effectiveness of these strategies, ensuring sustainable security and resilience in an increasingly complex maritime environment.

Policymakers can use the results of this research as a basis for developing more targeted and effective policies in improving maritime security and resilience in ALKI II. By understanding the factors that influence the success of a maritime security strategy, policies can be adjusted to focus on the most influential components.

2.2. Risk management

Risk management is a systematic approach to identifying, evaluating, and managing risks associated with specific operations or activities with the goal of reducing negative impacts and enhancing positive opportunities. In a broader context, risk management is applied to anticipate and respond to risks that could affect the strategic objectives of an organization or entity. It involves the process of identifying risks, conducting in-depth evaluations of the impact and probability of risks, and developing effective mitigation strategies.

According to Hillson and Murray-Webster (2017), various methods and techniques in risk management are explored within project environments and organizations. They emphasize that effective risk management requires a holistic approach that considers the complexity and uncertainty of the operational environment. Additionally, studies by Aven (2016) discuss theoretical frameworks in risk management, highlighting the importance of decision-making based on risk-related information, as well as effective evaluation and communication of the risks faced.

Overall, a profound understanding of risk management is crucial not only for managing operational risks but also for building organizational resilience against changes and challenges that may arise.

2.3. Multiplier resources in ALKI II

Multiplier resources refer to resources or investments that produce a multiplier effect in the economy. In the context of ALKI II, multiplier resources include investments and policies that promote increased economic activity through shipping, trade, and the development of maritime infrastructure. This multiplier effect is seen in the creation of jobs, regional economic growth, and increased national income.

2.4. Application of multiplier resources in ALKI II

Investments in the construction and improvement of ports along ALKI II, such as in Makassar and Balikpapan, enhance capacity and operational efficiency. Better ports allow for faster and more efficient movement of goods, resulting in reduced logistics costs and increased economic competitiveness. According to research by Lam and Yap (2011), improvements in port infrastructure have a significant multiplier effect on regional economic growth. Enhanced port facilities not only facilitate smoother trade but also attract more shipping activities, stimulating broader economic benefits and development in the surrounding regions.

Developing shipyards and supporting industries, such as ship maintenance and repair, is crucial for the economic vibrancy of ALKI II. Enhancing the capacity of these industries creates numerous jobs and new business opportunities, serving both domestic and international ships. This development attracts international vessels passing through ALKI II, thereby boosting foreign exchange earnings. Expanding the maritime industry leads to a positive ripple effect on the local economy, as increased activity in shipyards and related sectors drives more employment and economic diversification, further strengthening the region's economic base.

Investments in maritime surveillance and patrol technologies are essential for securing ALKI II routes from threats like piracy and other illegal activities. Improved security measures ensure the safety of maritime corridors, increasing the confidence of maritime industry players and boosting international trade. Assured security fosters a robust trade environment, as traders and shipping companies feel more secure about using these routes. This enhanced security leads to higher trade volumes through ALKI

II, contributing to the overall economic stability and growth of the region, and reinforcing the importance of secure maritime channels for economic progress.

Investing in maritime education and training significantly improves the quality of human resources in the maritime sector. A skilled and well-educated workforce enhances the productivity and efficiency of maritime operations, making the sector more competitive globally. Research by Gekara and Sampson (2009) indicates that comprehensive maritime training programs have a multiplier effect, leading to improved performance across the maritime industry. By fostering a knowledgeable and capable workforce, the region can ensure sustained economic benefits, maintaining its competitive edge in the global maritime arena and driving long-term economic growth.

3. Materials and methods

The research method used in this research was a mixture of quantitative and qualitative methods. Mixed methods utilize the strengths of quantitative and qualitative methods at once (Cresswell, 2016, p. 288). The variant used was the explanatory sequential mixed method. In the initial stage, researchers identified existing theories to determine the factors/variables that determine the success of maritime security and resilience strategies. These factors were then arranged in a model using Structural Equation Modeling (SEM). SEM is a type of multivariate analysis that analyzes several research variables simultaneously (Solihin and Ratmono, 2020, pp. 1–2). The main advantage of SEM is that it can test complex research models simultaneously, analyze variables that cannot be measured directly (unobserved variables), and consider measurement error (Hair et al., 2011). Previously, qualitative data collection was carried out through interviews with 15 informants. In addition, quantitative data collection was carried out at the Indonesian Navy's Second Fleet Command Headquarters in Surabaya (East Java Province) and the Maritime Security Task Force of Second Fleet Indonesian Navy (Guskamla) in Manado (North Sulawesi Province). The population was 815 personnel involved in securing ALKI II, with a sample size of 277 people. The sampling process using a purposive sampling technique involved selecting key personnel from the naval strategic command who were directly involved in maritime security operations at ALKI II. A sample size of 277 individuals was determined to ensure sufficient statistical power for the structural equation modeling analysis, considering the complexity and multi-dimensional nature of the variables investigated. To ensure reliability, strict protocols were implemented during data collection, including standardized questionnaires and structured interviews. Data validity was maintained through triangulation of qualitative and quantitative data sources, corroborating interview findings with insights obtained from operational data and organizational documents. In qualitative data sources, to test the validity of the data, the data that has been collected is then analyzed in three stages, namely data reduction, data presentation and drawing conclusions. Meanwhile, for quantitative data sources, the validity of the data is tested using validity and reliability tests.

4. Results and discussion

4.1. Result

After determining Indonesia's status as an archipelagic state, the provisions for the Indonesian government to this status are regulated in Articles 46–53 of United Nations Convention on the Law of the Sea 1982 (UNCLOS 1982). Indonesia may determine sea lanes for ships and aircraft for foreign countries that will pass continuously directly and as quickly as possible through or over its archipelagic waters and adjoining territories.

Maritime security and resilience in ALKI II have become increasingly important, as has the plan to move the Indonesian National Capital from Jakarta to East Kalimantan, which directly faces ALKI II. IKN is the center of politics, administration, demography, economy, finance, education, culture, innovation, and infrastructure and a focal point in international relations. The transfer of the IKN means the transfer of the Center of Gravity (COG), according to the Prussian strategic thinker Carl Von Clusewitz, defined as the point on which all forces and movements rest. The history of contemporary warfare places the IKN as an essential pivot that influenced the outcome of military campaigns. In the period 1914–2021, there were 152 cases of IKN attacks (Maharani, 2022, p. 2). To secure the IKN from the threat axis originating from ALKI II, it is necessary to adjust the Navy's posture, as well as formulate a comprehensive maritime security and resilience strategy.

The Navy, like other navies, has a universal duty to enforce control over certain seas, prevent enemies from controlling certain seas, and use the sea for their interests. Therefore, Koarmada II (Second Fleet Command), as an integral part of the Indonesian Navy, carries out ALKI II security through an operation title in a Joint Task Command (Kogasgab) involving Air Force Operations Command II. Kogasgab Pam ALKI II continuously strives to prevent and ward off every form of crime throughout ALKI II by deploying elements at points that are considered prone to violations to realize maritime security and resilience. Maritime security is a condition of creating sea safety, sea power, sea security, and freedom from threats (Buerger, 2015). Geoffrey Till further explained that maritime security is traditional to carry out sea control and expeditionary operations and maintain good order at sea because the sea is now used not only to secure land but also as a natural resource, transportation medium, and essential aspects of the environment. Maritime resilience can absorb and contain shock, reorganize after a disturbance to resume functionally, apply adaptive response in the face of threat, cope with hazards, and recover quickly from disruption (Omer, 2012, p. 687)

The Strategy Theory developed by Arthur F. Lykke, known as Lykke's Model, is a relationship between ends, ways, and means (Sugiyono, 2020, p. 8). The model is still applied in formulating military strategies today. This study reconstructs the strategy theory by adding risk management variables (RM) and management resources multiplier (mom) as moderation variables to strengthen the relationship between ways and ends. The ends of strategy are maritime security (MS) and maritime toughness (MR) in ALKI II, while the ways of strategy are operational effectiveness (EOP) and command and control effectiveness (EKK). The means of strategy are conceptual components (KSL), physical components (FSK), moral components (MRL), and command and control center capabilities (PKL).

Maritime security is measured by the ability of maritime forces to protect sea transportation lanes in ALKI II, prevent violations of the law, realize shipping safety (safety), free from the threat of navigation hazards, and make an optimal contribution to the development of the blue economy for the welfare of the community. Maritime security is achieved when the condition of the waters is safe for marine users and free from threats or interference with marine utilization or use activities. A safe sea contains the understanding that the sea is free from threats, namely threats of violence, threats to the environment and natural resources, violations of the law, and threats of navigational hazards. Meanwhile, maritime resilience is measured by good management in handling emergency conditions, providing optimal protection of vital objects, progressive development of defense and security capabilities, and strengthening national gatra (population, territory, national resources, ideology, politics, economy, socio-culture, defense, and security) in the face of various threats, disturbances, obstacles, and challenges, able to adapt to the development of the strategic environment, can quickly recover from disruptions, as well as have continuity of function. ALKI II maritime security and resilience strategy model as shown in **Figure 1**.

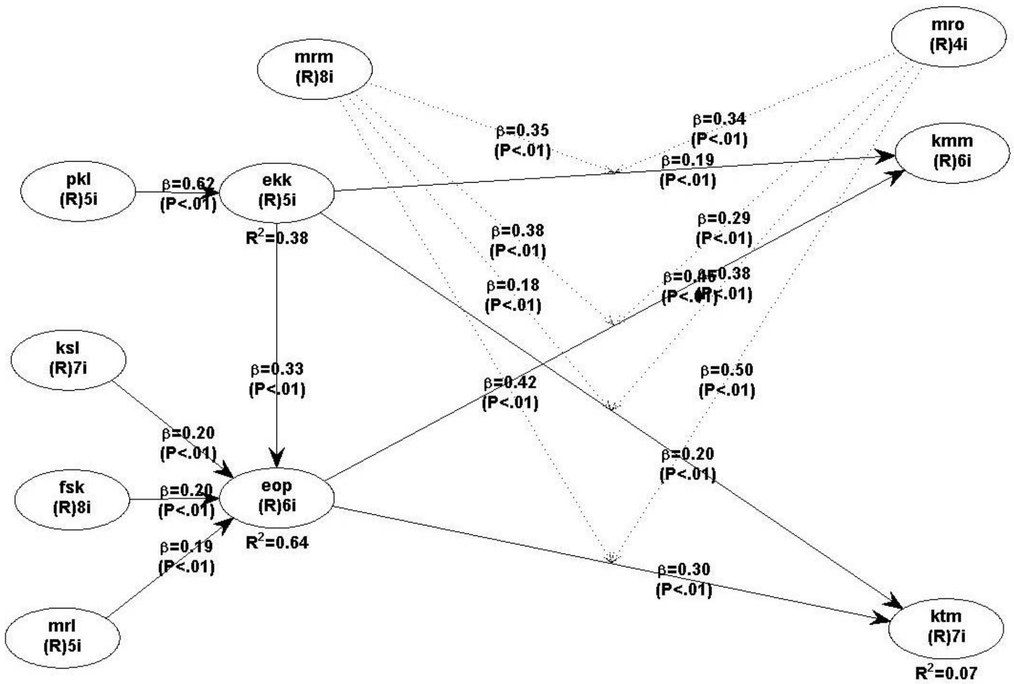

Figure 1. Results of the Maritime Security and Resilience Strategy Model Estimation.
Source: Researcher Results, 2024.

4.2. Model fit a quality indices

During the estimation phase, results are generated that include the final values of estimated parameters. At this stage, the researcher assesses the alignment between the data and the model. Evaluating how well the data fits the model occurs through various stages, beginning with an overall fit test of the model. This includes tests for both the measurement model fit and the structural model fit. The outcomes of the overall model fit test are detailed in **Table 1**, illustrating the calculations and results.

Table 1. The calculation results of the overall model fit test.

Model Fit and Quality Indices	Score	Criteria	Description
Average path coefficient (APC)	0.325	$P < 0.001$	Fit
Average R-squared (ARS)	0.267	$P < 0.001$	Fit
Average adjusted R-squared (AARS)	0.255	$P < 0.001$	Fit
Average block VIF (AVIF)	5.105	acceptable if ≤ 5, ideally <= 3.3	Not Fit
Average full collinearity VIF (AFVIF)	3.003	acceptable if <= 5, ideally <= 3.3	Fit
Tenenhaus GoF (GoF)	0.737,	small ≥ 0.1, medium >= 0.25, large >= 0.36	Large
Sympson’s paradox ratio (SPR)	0.452	acceptable if >= 0.7, ideally = 1	Not Fit
R-squared contribution ratio (RSCR)	0.718	acceptable if >= 0.9, ideally = 1	Fit
Statistical suppression ratio (SSR)	0.824	acceptable if >= 0.7	Fit
Nonlinear bivariate causality direction ratio (NLBCDR)	0.676	acceptable if >= 0.7	Not Fit
Standardized root mean squared residual (SRMR)	0.059	acceptable if <= 0.1	Fit

Source: Researcher results, 2024.

Kock (2011) and Solihin and Ratmono (2020) underline key fit indicators that are important to pay attention to, namely average path coefficient (APC), average *R*-squared (ARS), and average full collinearity VIF (AFVIF). The APC value is 0.325, and ARS is 0.267, with a significance value of $p < 0.001$. Then, the AFVIF value as an indicator of multicollinearity is 3.003 (smaller than 5). So, the output results show that the criteria for the goodness of fit model have been fulfilled. Another fit indicator that is quite important is the GoF tenement (GoF), which measures the explanatory strength (explanatory power) model (Kock, 2015). The estimated results in this study value the GoF tenement (GoF) to be 0.737 or included in the explanatory strength category on the significant criterion (large).

4.3. Hypothesis test

The results of the hypothesis tests for each variable are presented in **Table 2**. This table summarizes the significance values and coefficients for each hypothesis, highlighting which factors have a significant impact on the effectiveness of maritime security and resilience strategies.

The results presented in **Table 2** confirm the hypothesis testing outcomes, providing key insights into the factors influencing maritime security and resilience strategies. The significance values and coefficients highlight the importance of conceptual and physical components, as well as command and control effectiveness, in shaping the success of operational strategies. These findings emphasize the critical role of effective resource management and risk mitigation in enhancing maritime operations, as demonstrated by the relationships between the variables.

Table 2. Hypothesis result.

Hypothesis	Sig value.	Description
H1	0.20	H0 of the KSL coefficient on EOP is rejected.
H2	0.20	H0 of the FSK coefficient on EOP is rejected.
H3	0.19	H0 of the MRL coefficient on EOP is rejected.
H4	0.62	H0 coefficient of PKL on EKK is rejected.
H5	0.33	H0 of the EKK coefficient on EOP is rejected.
H6	0.46	H0 of the top coefficient on MS is rejected.
H7	0.30	H0 the top coefficient on MR is rejected.
H8	0.19	H0 of the EKK coefficient on MS is rejected.
H9	0.20	H0 of the EKK coefficient on MR is rejected.
H10	0.38	H0, the MRM coefficient which strengthens the influence of EOP on MS is rejected.
H11	0.42	H0, the MRM coefficient which strengthens the influence of EOP on MR is rejected.
H12	0.35	H0, the MRM coefficient which strengthens the influence of EKK on MS is rejected.
H13	0.18	H0, the MRM coefficient which strengthens the influence of EKK on MR is rejected.
H14	0.29	H0 from the RM coefficient which strengthens the influence of EOP on MS is rejected.
H15	0.51	H0, the RM coefficient which strengthens the influence of EOP on MR is rejected.
H16	0.34	H0 from the RM coefficient which strengthens the influence of EKK on MS is rejected.
H17	0.38	H0 of the RM coefficient which strengthens the influence of EKK on MR is rejected.

4.4. Discussion

4.4.1. Effect of conceptual components (KSL) on operation effectiveness (EOP)

The effectiveness of operations in implementing sea control, akin to the theory of sea control and fighting power, hinges on several critical conditions. A pivotal component is the conceptual framework, encompassing mastery of tactics and procedures that serve as the linchpin between theory and practice. These tactics and procedures must remain adaptable to evolving technological advancements. They encompass a spectrum of elements including the coordinated deployment of sea forces, methods for detection and enforcement, leadership, command and control, operational planning, decision-making processes, and support functions such as intelligence, operational information, logistics, and protection.

Within maritime security, tactics and procedures also address anti-surface warfare, given the potential involvement of surface ships in hostile acts or intents. Key aspects that require mastery include standardized procedures for maritime security, rules of engagement, and protocols for Visit, Board, Search, and Seizure (VBSS). Additionally, proficiency in tactics and procedures extends to tactical coordination with surface ships, submarines, and aircraft, as well as with the Command-and-Control Center. Understanding the operational plan and bolstering the morale of personnel are also integral facets of mastering tactics and procedures for effective operational execution.

The conceptual component also includes the completeness of national legal rules in regulating the Rights and Obligations of Ships when passing through ALKI II, the completeness of international legal rules, the doctrine of conducting joint operations, the implementation of operating principles and functions, synergy between elements of operations and with other maritime stakeholders, as well as planning capability building and force building based on operational needs in ALKI II.

Based on the findings from testing the research hypothesis, as depicted in **Figure 1**, it is evident that the impact of conceptual components on operational effectiveness is 0.20, with a significance level of $p < 0.01$. This indicates that variables related to conceptual components have a significant and positive influence on operational effectiveness, thereby contributing to the successful implementation of maritime security and resilience strategies in ALKI II.

The practical implication of these findings is the importance of paying attention to and strengthening conceptual components in designing and implementing maritime security and resilience strategies in ALKI II. Knowing that variables related to conceptual components have a positive and significant influence on operational effectiveness, practitioners and decision-makers can focus on developing and improving their understanding and mastery of the tactics, procedures, and concepts underpinning their strategies. This can enhance the ability to manage and respond to maritime security challenges, as well as improve the capability to deal with complex threats and risks in the ALKI II region. These results thus provide a solid foundation for the development of more effective policies and strategies to ensure maritime security and resilience in Indonesia.

4.4.2. The effect of physical components (FSK) on operation effectiveness (EOP)

One essential operational requirement for achieving effectiveness is firepower or armament capability (Wade, 2010, pp. 3–11). Firepower serves as a crucial asset in both offensive and defensive operational strategies such as sea control, prevention of maritime use, and deterrence. Currently, the primary focus is on enhancing combined firepower capabilities against military targets on land, at sea level, in the air, and underwater. In the context of today’s maritime security strategy in ALKI II, weapon capabilities are evaluated based on accuracy, the ability to neutralize surface targets, anti-ship warfare capabilities in surface and asymmetric warfare scenarios, VBSS proficiency, and deterrent effects against potential violators in ALKI II. According to the findings from testing the research hypothesis, it is evident that the impact of physical components on operational effectiveness is 0.20, with a significance level of $p < 0.01$. This indicates that physical components play a positive and significant role in enhancing operational effectiveness, thereby supporting the successful implementation of maritime security and resilience strategies in ALKI II.

The deployment of Koarmada II forces in ALKI II is faced with a degree of threat, so the weapons owned by KRI in the category can carry out enforcement (Action) or martial arts (self-defense). Armament readiness is part of the operational readiness of elements as part of the operational readiness of the Indonesian Navy, which is the primary obligation of the Navy Headquarters (Mabesal) under the leadership of the Chief of Naval Staff (Kasal) in accordance with the mandate of Article 16 of Law Number 34 of 2004 concerning the TNI. Operational readiness is determined by three elements that make up the formulation of operational readiness: material, personnel, and training level. The readiness of equipment, including weapons, is an absolute requirement for the functioning of a defense system and organization that is affected by the rate of damage, maintenance capabilities, and material support. To support the resilience of the Navy's defense equipment, independence is needed to construct, operate, and maintain the defense equipment (Nugraha, 2016, p. 265).

The physical component also includes the fulfillment of adequate human resources, the level of professionalism of human resources in accordance with the required competency standards, the reliability of the KRI defense equipment/surface ships in ideal numbers, the reliability of aircraft, both fixed-wing and rotary wing, the reliability of coastal radar and coastal defense systems, the availability of bases, maintenance facilities, and repairs, logistics support systems to support the sustainability of operations, as well as education, training and maintenance of readiness levels.

The exercises included cooperation operations involving various elements, warfare exercises, and maritime security procedures. Maritime security success will only be achieved with adequate training. In general, practice is necessary to establish a common philosophy, language of operation, and intent and achieve unity of action. The level of training of TNI Navy operating units is an integration of material or defense equipment that has been prepared with crew personnel to carry out operational tasks in accordance with the essential functions of the unit and the operational tasks to be carried out. Increased professionalism needs to be done through comprehensive and well-programmed exercises. The Training Command (Kolat) formed in each Main Operational Command, including Kolat Koarmada II, is the unit that is the main organizer of the preparation of unit operational training in accordance with the expected level of training and the field of assignment faced.

KRI and aircraft operational training, including ALKI II security pre-task training, is an integrated training chain as a continuation of equipment training and system integration training in KRI and aircraft, respectively. It is also part of multilevel exercises and continues from the elemental level at the base (L1), elemental level exercises with field/sailing maneuvers (L2), and inter-element exercises of the same kind (L3) to the peak exercise of the Indonesian Navy Armada Jaya, and TNI Joint Exercises.

The effectiveness of the operation is inseparable from the level of exercise carried out. The link in maritime security strategy In ALKI II, the exercise can be measured through a multilevel training mechanism and continues with material covering warfare training both anti-air warfare (PAU), anti-surface warfare (AKPA), anti-submarine warfare (AKS), electronic warfare (Pernika) and mine warfare. In addition, training is also needed in the operation of equipment on ships, maritime security procedures exercises, VBSS exercises, tactical cooperation exercises, and pre-assignment exercises before KRI and aircraft depart to carry out operations at ALKI II.

The informant supports this condition by stating that adequate training is needed to achieve effective operations and support the task's success. The exercise also includes a form of exercise at the time of procurement of new ships and ships that have completed repairs, including four types of training, namely:

a. Equipment course, personnel learn to account for the use and technical maintenance of every piece of equipment on board.
b. System Integration Training, which is how one equipment and another equipment can support each other for successful operations.
c. Operational training, integration between equipment and humans as crews are faced with the mission carried.

Shut down Training, Work Up period: this exercise is designed to achieve the standards expected to deal with contingencies, including war.

Practical implications that can be proposed include placing a strong emphasis on training and developing personnel to enhance their understanding and mastery of maritime security concepts and procedures, ensuring they can effectively implement strategies in ALKI II. Additionally, incorporating these conceptual components into strategic planning and evaluation processes will improve the adaptability and effectiveness of maritime security measures. Developing and updating operational doctrines and procedures to reflect best practices and technological advancements is also crucial. Strengthening command and control systems to support real-time communication, surveillance, and decision-making will further enhance operational effectiveness. Embracing new technologies and innovations, such as advanced intelligence and information systems, will aid in the detection, analysis, and response to maritime threats. Encouraging closer collaboration and coordination among various units and commands involved in maritime security will ensure consistent and effective application of concepts and tactics. Continuous monitoring and assessment of operational effectiveness and the impact of conceptual components will allow for ongoing improvements and adjustments, ultimately contributing to the successful implementation of maritime security and resilience strategies in ALKI II.

4.4.3. The effect of moral component (MRL) on operation effectiveness (EOP)

Marcu (2009, p. 125) asserts that manpower is a crucial military resource. Effective military capabilities necessary for national security can only be achieved by transforming budgets and weapon systems into functional assets through high-quality and motivated personnel. Managing human resources is vital for attaining a capable and efficient national defense, including the execution of operations. Training plays a significant role in developing professional human resources as a component of operational readiness. Additionally, Vego (2016a, p. 67) highlights that the success of an operation is mainly influenced by motivation, operations management, and leadership.

The results of testing the research hypothesis, as can be seen in **Figure 1**, show that the influence of the moral component on operational effectiveness is 0.19 with a significance level of $p < 0.01$, which means that the moral component positively and significantly affects the effectiveness of operations which will ultimately determine the success of the implementation of maritime security and resilience strategies.

The moral component in this study includes personnel passion and motivation for task success, operations management, organizational management, leadership, and mutual trust. Enthusiasm and motivation need to be supported by mental strength in the form of desire, attention, willingness, and aspiration to respond to the dynamics of the threat faced. With this motivation, we will always aspire to progress, maintain good implementation quality, and create conducive cooperation and creation. The target of achieving organizational or personnel performance is to achieve or obtain the ability of personnel to carry out work, which includes operational support by preparing defense equipment capabilities and handling logistics support problems and personnel capabilities and readiness. The increase in morale and work motivation will encourage the improvement of performance quality, in this case, the implementation of increasingly effective operations.

Operations management is one of the determinants of the moral component, as it regulates the fields of organization, command, control, communication, computerization, intelligence, observation and reconnaissance, and application of operating guidelines. An operating guide is needed to carry out the operating concept developed at all levels. In addition, establishing the operational readiness cycle of defense equipment is essential in effective and efficient operations management.

The practical implications include developing training programs focused on enhancing personnel morale, such as leadership training, motivation, and mental development, to ensure that personnel have high spirits and dedication in performing their duties. Additionally, creating a supportive and conducive work environment, including personnel welfare and recognition of achievements, is crucial for boosting morale. Inspirational and supportive leadership is also needed to motivate personnel and improve operational effectiveness. Effective and transparent communication between leaders and personnel will enhance trust and team cooperation, positively impacting morale. Moreover, promoting a balance between work and personal life will reduce stress and improve personnel well-being, which in turn increases morale and operational effectiveness. Regular evaluations and constructive feedback are also necessary to help personnel understand their performance and areas needing improvement, encouraging continuous improvement, and enhancing the sense of accomplishment and motivation. By implementing these measures, organizations can significantly boost personnel morale, thereby improving operational effectiveness and ultimately contributing to the successful implementation of maritime security and resilience strategies.

4.4.4. The effect of command and control center (PKL) capabilities on command and control effectiveness (CCE)

The theory of sea control proposed by Milan Vego mentions several basic things needed to achieve success, including: command and control. The success of an operation is inseparable from the effectiveness of command and control which includes aspects of quick decision-making capabilities, sensor netting, utilization of technology and information exchange with KRI and aircraft. The effectiveness of command and control needs to be supported by Puskodal that has adequate capabilities. Command and control in an operation is a bridge to synergize the operation of different elements, units, units, dimensions to institutions with different cultures and doctrines. In harmony with the above theory is the theory Network Centric Warfare (NCW). NCW supports command speed as the conversion of positions of information superiority into action. Furthermore, NCW has the potential to contribute to a blend of tactical, operational, and strategic levels. NCW is not narrow about technology, but broader about the emerging military response to the Information Era. From this theory, it can be concluded that to achieve effective command and control, adequate Puscodal capabilities are needed.

The output of Command and Control is the commander's decision, which is based on a comprehensive understanding of the situation and then communicated to field elements for execution. In command and control implementation, Puskodal must facilitate the speed of command by being supported with adequate sensors to gather information, display it for analysis, and use it as decision-making material. These decisions are then forwarded to relevant elements for action. Additionally, Puskodal must leverage technological advancements to enhance its capacity to obtain a comprehensive situational picture, cooperate with various related agencies, engage beyond line of sight, achieve self-synchronization, and improve tempo and responsiveness.

Based on the results of testing the research hypothesis, the influence of the command and control center capability is 0.62 with a significance level of $p < 0.01$. This indicates that the command and control center capability has a significant and positive effect on the effectiveness of command and control, supporting the successful implementation of maritime security and resilience strategies. Puskodal plays a crucial role in gathering information, analyzing it, and producing actionable decisions.

Command refers to the authority granted to an individual to coordinate and control a military organization. Control, on the other hand, has two meanings: first, it denotes the specific authority given to a commander over a military organization not usually under their command, such as operational control and tactical control. The second definition refers to the process by which a commander organizes and directs all activities of the troops under their command.

A good command and control center will improve the Commander's ability to give informed decisions that are fast, precise and determine the success of achieving the main tasks. The current character of operations is characterized by an uncertain and rapidly changing operating environment that requires adequate Puskodal capabilities while still implementing a decentralized system to provide space for lower commands to take action initiatives in accordance with the initial directive of the Commander.

The practical implications include the need for increased investment in information and communication technology to strengthen the infrastructure of command and control centers, including the development of sensor systems and analytical software capable of enhancing situational awareness. Second, it emphasizes the importance of enhancing personnel capacity at command and control centers through intensive training to ensure mastery of technology and effective understanding of operational procedures. Furthermore, improved collaboration among various related institutions and the development of independent monitoring systems will enhance operational responsibility and effectiveness. Increasing situational awareness through adequate technological integration is also crucial in facilitating timely decision-making and rapid responses to maritime threats. By implementing these measures, organizations can strengthen their command and control systems, which are essential for comprehensive maritime security and resilience.

4.4.5. The effect of command and control effectiveness (CCE) on operation effectiveness (EOP)

In the theory of sea control put forward by Milan, Vego mentions some fundamental things needed to achieve success. Among these basic things is command and control. The success of an operation is inseparable from the effectiveness of command and control which includes aspects of quick decision-making capabilities, netting sensors, technology utilization and information exchange with KRI and aircraft. In harmony with the theory is the theory of Network Centric Warfare (NCW). NCW supports command speed as the conversion of positions of information superiority into action. Furthermore, NCW has the potential to contribute to a blend of tactical, operational, and strategic levels. NCW is not narrow about technology, but broader about the emerging military response to the Information Era. From this theory, it can be concluded that the effectiveness of command and control contributes to the achievement of operational effectiveness.

Command and control effectiveness is measured by speed in obtaining a comprehensive picture of the situation (information superiority), speed in analyzing, evaluating, and producing actionable information, speed of distribution and dissemination of information to operational units, the ability to control the KRI, aircraft and operational units on the ground effectively, and protection of information. While the effectiveness of operations is measured by the degree and support of the base according to operational needs, the deployment of KRI and aircraft in accordance with the priority of threats to carry out detection, recognition, value and enforcement, speed and accuracy in response and enforcement, interoperability and cooperation with the KRI, aircraft and control command centers, preparedness and continuity of operations, and protection or protection against own forces.

Based on the findings from testing the research hypothesis, it is evident that the impact of command and control effectiveness on operational effectiveness is 0.33, with a significance level of $p < 0.01$, indicating a positive and significant influence. Therefore, it is crucial to continuously enhance Puskodal capabilities to foster the desired effectiveness in command and control. Practical implications of this include the necessity to invest in advanced technologies and infrastructure that support real-time information processing and decision-making. Additionally, ongoing training and development programs for personnel are essential to ensure proficiency in utilizing these technologies effectively. Improved integration and interoperability with allied agencies will further enhance coordination and operational efficiency. Moreover, maintaining a proactive approach in updating command and control strategies based on technological advancements and operational feedback will be critical for sustaining and enhancing operational effectiveness in securing maritime environments.

4.4.6. The effect of operating effectiveness (EOP) on the success of realizing maritime security (MS) and maritime resilience (MR)

Success in maritime security and resilience is determined in part by the effectiveness of operations which in this study are related to the degree and support of supporting bases multiple short lines of operation, the deployment of KRI and aircraft in accordance with threat priority, speed and accuracy in response/enforcement, interoperability of KRI, aircraft, and Puskodal, sustainability and readiness, and protection of own forces. This is in line with the theory put forward by Wade (2015, pp. 2–11) that the implementation of effective operations must pay attention to six operational functions, namely command and control (command and control), dayan motion and access (mobility and access), firepower (fire power), durability of operation (sustainment) and protection (protection).

Operational effectiveness is crucial for the implementation of maritime security and resilience strategies. According to the study findings, operational effectiveness significantly impacts the success of achieving maritime security, with a coefficient of 0.46 and a significance level of $p < 0.01$. This indicates a positive and substantial influence of operational effectiveness on maritime security outcomes. Additionally, operational effectiveness also influences the success of achieving maritime resilience, with a coefficient of 0.30 and a significance level of $p < 0.01$, highlighting its positive and significant role in enhancing maritime resilience efforts. These results underscore the importance of maintaining and enhancing operational effectiveness in ensuring the success of both maritime security and resilience initiatives.

In the comprehensive maritime security strategy of ALKI II, Koamada II's capability revolves around two primary components: force deployment and force employment. Force deployment pertains to the strategic positioning of forces at key locations to meet the tactical and strategic requirements of maritime security and resilience efforts. Force employment, on the other hand, refers to the utilization of force over a specified period within strategic zones or areas to counter real or perceived threats. Consistent with deterrence theory, effective force deployment requires a continual presence in controlled or contested areas to demonstrate readiness and deter potential adversaries. Round-the-clock attendance is an effort to communicate intentions directly that is expected to have a deterrent impact. The presence of elements in the sea that are visible to users, especially the success in carrying out action against actors who commit violations in ALKI II will have a deterrent impact so as to prevent the intention of marine users to commit violations.

The operation pattern is arranged based on the rotation pattern (employment cycle) that is flexible. The ideal use of force consists of three parts, namely the element that carries out the operation, the element standby and elements of improvement. This pattern can change according to the needs of deployment into two, namely the element of operation and the element of improvement in accordance with the demands of the needs of presence at sea based on escalation and priority of threats.

Based on existing threats, it is necessary to collect data and intelligence information from various sources, both intelligence operations by the Koarmada II intelligence unit and from side units, including information from coastal communities and fishermen. In relation to the pattern of force deployment in ALKI II, the deployment pattern carried out is to increase the intensity of ALKI II security operations at the northern end of ALKI II including the border waters with Malaysia and the Philippines by increasing the use of KRI which has high deterrence and optimal sea endurance for conditions in the Sulawesi Sea.

Implementation maritime security and resilience strategy requires a combination of the use of surface elements and air elements. The surface element applies a pattern of waiting operations at the location or strategic point closest to the patrol area and moves based on target information found by Puskodal, intelligence and aircraft elements that are carrying out patrols. The pattern of motion of an aircraft is largely determined by information from Puskodal and intelligence. With this operating pattern, the motion pattern of surface elements and air elements can be effective to support the success of implementation maritime security and resilience strategy. In addition, the effectiveness of Kogasgab operations in securing ALKI II is also supported by Second Fleet Quick Response located at Navy bases along ALKI II with the main task of carrying out rapid action in the context of preventive and repressive against an incident report, and standby 1×24 hours to anticipate distress signal a report on the analysis of Puskodal Koarmada II. The placement of the rapid reaction unit is flexible at each base according to the hotspot vulnerability is a priority.

The practical implications of these findings indicate the need for a greater focus on enhancing operational effectiveness in maritime security and resilience strategies. With significant influence on the success of achieving maritime security and resilience, practical steps can be taken to strengthen operational effectiveness. Firstly, it is important to allocate adequate resources in developing infrastructure and technology that support maritime operations, including advanced information and communication systems. Secondly, continuous training and development for personnel are crucial to ensure readiness in facing complex operational challenges. Improved collaboration among various related institutions also needs to be enhanced to enhance coordination and responsibility in urgent situations. In addition, routine evaluation and constructive feedback will help improve operational strategies, ensure adaptability to environmental changes, and enhance the ability to effectively address maritime threats. By taking these steps, organizations can strengthen their maritime security and resilience, better tackle challenges, and achieve strategic goals more effectively.

4.4.7. The effect of command and control effectiveness (CCE) on the success of realizing maritime security (MS) and maritime resilience (MR)

Based on the findings from testing the research hypothesis, it is evident that command and control effectiveness significantly influences maritime security, with a coefficient of 0.19 and a significance level of $p < 0.01$. This indicates a positive and substantial impact of command and control effectiveness on achieving maritime security in ALKI II. Additionally, command and control effectiveness also plays a crucial role in maritime resilience, with a coefficient of 0.20 and a significance level of $p < 0.01$, highlighting its positive and significant contribution to achieving maritime resilience in the same context.

Practical implications of these findings underscore the importance of enhancing command and control effectiveness in maritime operations. Firstly, investments in advanced information technology and infrastructure are necessary to improve the speed and accuracy of information processing and dissemination within Puskodal. Secondly, continuous training and development programs should be implemented to ensure personnel are proficient in utilizing technological tools and protocols effectively. Furthermore, fostering a culture of rapid decision-making and information security will enhance operational responsiveness and resilience. By addressing these aspects, organizations can strengthen their command and control capabilities, thereby enhancing both maritime security and resilience effectively in ALKI II.

The command and control system must be able to present data and information to decision makers, namely the Commander/Commander to carry out appropriate and decisive actions. Command and control are built to facilitate the decision-making process by collaborating and compiling the entire tactical picture of the battlespace completely. In addition, command and control effectiveness is also built from the ability to produce actionable information in the sense that the information has been analyzed and validated properly, supports the implementation of operational plans, as well as synergy and interoperability built with various competent agencies. Effective command and control also have the ability to control various elements that carry out operations, one of which is the ability to forward information from the analysis results to the elements of the operation degree for action.

The deployment of radar surveillance including the Integrated Maritime Surveillance System (IMSS) in a strategic position is very supportive in increasing information collection capabilities in the context of monitoring ALKI II territorial waters combined with various inputs from other dimensions and other agencies, and even friendly countries in the form of information exchange which is then analyzed by competent parties to produce Predictions of the threat of potential territorial violations occurring in the near future or determining sectors that need to be a priority for the presence of elements at sea in order to prevent or take action against potential violations so that it will provide increased deterrence against opponents.

In accordance with the theory of cooperation (synergy) James F. Stoner (Asshiddiqie, 2012, p. 25), the implementation of maritime security strategy in ALKI II in operational aspects can be held synergistically between the Navy, Air Force in a joint operation pattern so that the operations carried out get optimal results. Cooperation is also carried out by exchanging information to obtain information superiority in order to increase command and control effectiveness. Obstacles in the field in the form of communication facilities are expected to be harmonized with the implementation of equalization of communication systems and nets between sea units, air reconnaissance units and the existence of a master operation plan from TNI Headquarters which is further elaborated by the Main Operational Command of the Navy with the Air Force.

Cooperation is also carried out with other government agencies that have the authority to handle maritime issues which have been constrained because each is still acting according to sectoral rules that regulate their respective tasks and has not established synergy in an integrated manner. The cooperation that has been established so far is carried out in order to carry out law enforcement and security in the sea of Indonesian jurisdiction from various threats that exist both from within and from abroad.

The next cooperation is cooperation with the navies of countries in the region. Cooperation is carried out in the form of information exchange and coordinated patrols. Well-established cooperation will have a deterrent impact, increase response speed, and be able to increase regional mutual trust or Confidence Building Measure (CBM). To create integrated cooperation, an interoperability concept is needed that can integrate and integrate systems between the navies of cooperating countries. One of them is the need for a joint rule in the form of Standard Operating Procedure (SOP), the use of the same reference, an integrated doctrine and supported by an integrated communication system. Through the concept of interoperability in cooperation, there is an anticipation for enhanced command and control effectiveness and operational efficiency, aiming to bolster the success of the maritime security and resilience strategy in ALKI II.

4.4.8. Resource Multiplier as a moderation variable

There are resources multiplier, which can dramatically change the odd and improve the likelihood of victory or success in any competitive situation. By applying one or more resources multiplier to your situation, you can gain advantage that enable you to defeat your enemy or outperform your competition (Tracy, 2002, p. 6). It serves as a force multiplier by improving coordination among forces from different services operating together or among forces from different nations engaged in joint operations. This is crucial as operations are typically joint and often combined (Till, 2009, p. 78). The multiplier effect of resource management in this research is determined by maritime intelligence, information warfare (public affairs and counter-information), internal organizational coordination and communication, collaboration and mutual trust with external organizations, diplomacy in supporting national interests, territorial management, maritime and aerospace potential, research and development, as well as the level of technology modernization.

The effect of resource multiplier management variables as moderation variables that strengthen the effect of operating effectiveness on maritime security by 0.38 with a level of significance of $p < 0.01$, operating effectiveness on maritime resilience of 0.42 with a level of significance of $p < 0.01$, effectiveness of command and control on maritime security of 0.35 with a level of significance of $p < 0.01$, and the effectiveness of command and control over maritime resilience of 0.18 with a significance level of $P < 0.01$. This shows that resource multiplier management has a positive and significant influence on the relationship of operating effectiveness with maritime security and maritime resilience, as well as the relationship of command and control effectiveness with maritime security and maritime resilience. This means that the higher the resource multiplier management, the stronger the relationship between operating effectiveness and maritime security and maritime resilience, as well as between command and control effectiveness and maritime security and maritime resilience.

Practical implications of these findings underscore the critical role of resource multiplier management in enhancing maritime security and resilience strategies. Organizations should prioritize investments in resource multiplier technologies and strategies that amplify the effectiveness of operational and command and control capabilities. This includes bolstering infrastructure, acquiring advanced technologies, and improving coordination mechanisms among diverse military forces and allied nations. Furthermore, continuous training and development programs for personnel are crucial to ensure proficiency in utilizing these resources effectively. By enhancing resource multiplier management, organizations can optimize operational effectiveness, mitigate maritime threats more effectively, and strengthen overall maritime security and resilience capabilities. This strategic approach not only improves defense readiness but also contributes to regional stability and international cooperation in maritime operations.

Resource multiplier management is carried out by increasing the capacity of maritime intelligence and public affairs. Maritime intelligence is an important instrument in early detection and early prevention of various maritime threats. Good intelligence in maritime domain will be prerequisite for combating potential threat that hamper maritime development. This drives the need for maritime intelligence agencies to provide valid and adequate intelligence information needed for decision-making and actionable by operational units to realize maritime security and resilience. Furthermore, in the current era of globalization and information, public affairs increasingly have an important role in providing reliable information and building awareness of the maritime community. Public affairs can help organizations develop communication channels to internal and external publics and provide motivation to the internal public and maritime community to jointly devote themselves to the mission, goals and objectives of the organization. Activities carried out include fact finding, planning, communicating with various media, and evaluating.

Resource multiplier management also requires coordination and internal communication of the organization, collaboration and mutual trust with external organizations, diplomacy, territorial development, maritime and aerospace potential, research and development, and technological modernization in utilizing maritime forces and capabilities to support maritime security and resilience in ALKI II. Maritime power is a combined national force of major components, reserve components and supporting components used as a means to uphold sovereignty and law at sea, in order to protect and guarantee national interests at and or by sea. The components of maritime power include naval forces and capabilities, fleets of government agencies' vessels, national commercial fleets, national fishing fleets, support bases, including air bases, ports and facilities, maritime industries and services, reserve and support components used in realizing maritime security and resilience. Maritime capability is an economic, political and military capability manifested in its influence in using the sea for its own interests, as well as preventing the use of the sea by others that harm one's own party. Internally, the integration of maritime power and capability will be a factor that can lead to the supremacy of the sea in exercising control over national/international trade and economy by sea, use and control of marine resources, use of force and maritime economy. Externally, it can be demonstrated through increased diplomacy or Strategic Partnership by inviting regional countries to work together in realizing maritime security and resilience.

4.4.9. Risk Management as a moderation variable

Risk management in this study is determined by a risk assessment of the resources used, risk assessment of task implementation to achieve strategy objectives, risk mitigation, review, and risk management monitoring. The effect of risk management variables as moderation variables strengthen the effect of operating effectiveness on maritime security by 0.29 with a level of significance $p < 0.01$, operating effectiveness on maritime resilience of 0.51 with a level of significance $p < 0.01$, the effectiveness of command and control on maritime security of 0.34 with a level of significance of $p < 0.01$, and the effectiveness of command and control of maritime toughness of 0.38

with a level of significance of $p < 0.01$ significance $P < 0.01$. This suggests that risk management strengthens the positive and significant relationship between operating effectiveness with maritime security and maritime resilience and command and control effectiveness with maritime security and maritime resilience. Higher risk management strengthens the effect of operating effectiveness with maritime security and maritime resilience and strengthens the influence between command and control effectiveness and maritime security and maritime resilience.

Risks that will be faced with a capability deficit include risks to strength and risks to the implementation of Koarmada II tasks. The risk to strength is caused by the use of too high operational to fill the capability deficit of certain elements which has an impact on reducing the level of operational readiness in the form of shortening the service life of defense equipment, as well as degradation of soldier morale and morale. Meanwhile, the risk to the implementation of tasks is the non-achievement of the tasks carried out due to lack of capacity and capability, as well as low operational readiness.

Risk management by making choices to increase operational capacity by reducing capacity (trade capacity for readiness) or increase capability by reducing capacity (trade capacity for capability). Trade capacity for readiness can be done by reducing old and low-capability vessels, improving the quality of maintenance and repair, and increasing the manning of new and capable ships. Trade Capacity for Readiness can be done by upgrading capable vessels and increasing cooperation of maritime security tasks with other public enforcement agencies.

Risk management is then carried out by aligning operating commitments with expected preparation capacity and capabilities. Operation planning is prepared by considering the availability of budget support, meeting logistical needs, as well as the number and operational readiness of defense equipment. The cycle of using defense equipment, repair clocks and motion clocks can be a guide in the use of force by operational units. Risk management is also implemented through capacity building, force preparation through organizational structuring, increased maintenance capabilities and improvement, increased training effectiveness, and procurement of defense equipment deficits.

4.4.10. Resource multiplier management as a moderation variable reinforcing the effectiveness of operations with maritime security

The effect of resource multiplier management (MRM) variables as moderation factors is significant in enhancing the impact of operational effectiveness (EOP) on maritime security (MS) by 0.38, with a significance level of $p < 0.01$. This implies that the presence and effective management of resource multiplier variables strengthen the relationship between operational effectiveness and maritime security. The rejection of the null hypothesis (H0) for the MRM coefficient indicates that these management variables indeed play a crucial role in amplifying the positive influence of operational effectiveness on maritime security.

This finding underscores the practical importance of investing in and optimizing resource multiplier management strategies and technologies within maritime security frameworks. Organizations should prioritize the development and deployment of advanced technologies, infrastructure, and personnel training that enhance the efficiency and effectiveness of resource multipliers. By doing so, they can maximize operational capabilities, improve response times to maritime threats, and bolster overall maritime security resilience. Moreover, fostering international cooperation and interoperability among allied nations in managing these resources can further amplify their impact, contributing to regional stability and comprehensive maritime security strategies. Thus, enhancing resource multiplier management not only strengthens defense capabilities but also promotes broader security goals in maritime domains.

According to Bunker and Albanese (2011), effective resource management is essential for optimizing operational outcomes in military contexts. They argue that the ability to leverage resources efficiently, including personnel, equipment, and technology, directly impacts operational effectiveness and mission success. In the context of maritime operations, this translates to the efficient deployment of naval assets, surveillance systems, and logistical support, all of which are crucial for maintaining maritime security.

Furthermore, Vego (2013) emphasizes the importance of resource management in achieving operational and tactical superiority. He discusses how integrated and well-managed resources contribute to mission success and the ability to project power effectively across different maritime domains. This includes the coordinated use of air, surface, and subsurface assets, supported by robust command and control systems, to maintain situational awareness and respond swiftly to threats.

Practically, the integration of resource multiplier management enhances the responsiveness and agility of maritime forces, enabling them to adapt quickly to evolving threats such as piracy, illegal fishing, and smuggling. By investing in advanced technologies, enhancing interoperability among allied forces, and improving logistical support capabilities, maritime organizations can effectively leverage their resources to strengthen operational effectiveness and enhance maritime security.

4.4.11. Resource multiplier management as a moderation variable reinforcing the effectiveness of operations with maritime resilience

The statistical finding that MRM strengthens the effect of EOP on MR by 0.42, with a significance level of $p < 0.01$, signifies a robust and significant positive impact. This result indicates that when MRM practices are effectively implemented, they amplify the positive outcomes of operational effectiveness on maritime resilience. The rejection of the null hypothesis (H0) suggests that there is indeed a meaningful relationship between MRM and the enhancement of EOP's impact on MR.

Practically, this finding underscores the importance of strategic resource management in bolstering maritime resilience efforts. Organizations involved in maritime security and resilience should prioritize investments in optimizing resource allocation, technological integration, and personnel training. By enhancing MRM practices, such as improving logistical support, leveraging advanced technologies for real-time situational awareness, and fostering inter-agency cooperation, maritime entities can effectively mitigate risks and respond more effectively to maritime threats and challenges.

In military and defense, MRM strategies involve optimizing personnel, equipment, and logistical support to enhance mission success and adaptability to changing operational environments (Choi, 2013; Rosen, 2014).

In the maritime sector, where operations are often complex and geographically dispersed, effective MRM becomes crucial for maintaining operational readiness and responding to emergent challenges. According to Van Geenhuizen and Nijkamp (2008), resource management practices that integrate technological advancements and strategic planning contribute significantly to organizational resilience in maritime logistics and operations.

Practically, implementing MRM principles involves several key aspects: proactive planning, real-time resource allocation based on operational demands, integrating advanced technologies for enhanced situational awareness, and fostering collaborative partnerships among maritime stakeholders (Gruber et al., 2017; Roumboutsos et al., 2017). These practices not only optimize operational efficiency but also build resilience by enabling rapid response capabilities and adaptive decision-making in unpredictable maritime scenarios.

4.4.12. Resource multiplier management is accepted as a moderation variable reinforcing command and control effectiveness with maritime security

The effect of resource multiplier management (MRM) variables as moderation variables strengthens the impact of command and control effectiveness (EKK) on maritime security (MS) by 0.35 with a significance level of $p < 0.01$. The rejection of the null hypothesis (H0) of the MRM coefficient indicates that MRM significantly enhances the influence of EKK on MS. This finding underscores the critical role of MRM in optimizing resources and capabilities to bolster command and control effectiveness, thereby enhancing maritime security.

Practical implications of this finding include the necessity for maritime organizations to prioritize investment in MRM strategies. This involves strategic allocation of resources such as personnel, technology, and logistical support to enhance command and control capabilities. By improving resource management practices, organizations can effectively respond to maritime threats, maintain operational readiness, and mitigate security risks in dynamic maritime environments.

The literature supports the importance of effective resource management in enhancing command and control effectiveness and maritime security. For instance, Rosen (2014) discusses how optimized resource allocation and technological integration can strengthen command capabilities in military contexts. Additionally, Gruber et al. (2017) emphasize the role of advanced technologies and real-time data analytics in enhancing maritime operational capabilities and resilience.

4.4.13. Resource multiplier management as a moderation variable reinforcing command and control effectiveness with maritime toughness

The findings reveal that resource multiplier management (MRM) variables significantly enhance the impact of command and control effectiveness (EKK) on maritime sustainability (MR) by 0.18, with a significance level of $p < 0.01$. This implies that effective management of resources such as personnel, technology, and logistics can amplify the effectiveness of command and control in promoting maritime sustainability. By rejecting the null hypothesis (H0) regarding the MRM coefficient's influence on EKK and MR, the study underscores the critical role of resource management in augmenting command and control effectiveness to ensure the long-term ecological and operational sustainability of maritime environments.

The practical implications suggest that investing in robust resource management strategies is essential for enhancing command and control effectiveness in maritime operations. Organizations should prioritize the development of efficient resource allocation, technological integration, and personnel training to maximize operational sustainability and resilience. Strengthening these aspects will not only improve decision-making capabilities but also foster a proactive approach to mitigating environmental threats and enhancing maritime security.

According to Vego (2016b), effective command and control is contingent upon the integration and efficient management of resources. He highlights that comprehensive resource planning and allocation enable commanders to exert greater control over operational activities, facilitating timely decision-making and mission execution. In maritime operations, this translates to the coordinated deployment of naval assets, surveillance capabilities, and communication systems to maintain situational awareness and respond effectively to threats.

Additionally, Bunker and Albanese (2011) discuss the significance of resource management in enhancing C2 effectiveness. They argue that the strategic use of resources, including personnel, technology, and logistical support, is crucial for optimizing operational outcomes and achieving mission success. This includes improving information sharing, enhancing command visibility, and ensuring rapid response capabilities across maritime environments.

Practically, enhancing MRM within maritime operations involves investing in advanced technologies, improving interoperability among allied forces, and implementing robust logistical support systems. By doing so, maritime organizations can amplify their command and control capabilities, strengthen resilience against maritime threats, and enhance overall operational effectiveness.

4.4.14. Risk management as a moderation variable reinforcing the effectiveness of operations with maritime security

The effect of risk management variables (RM) as moderation variables that strengthen the effect of operating effectiveness (EOP) on maritime security (MS) by 0.29 with a significance level of $p < 0.01$ indicates a statistically significant relationship. This finding suggests that risk management plays a crucial role in enhancing the impact of operational effectiveness on ensuring maritime security. The rejection of the null hypothesis (H0) implies that there is indeed a positive and significant interaction effect between EOP and RM in bolstering MS. This finding underscores the critical role of proactive risk management in maritime operations, particularly in mitigating threats and vulnerabilities that could undermine security measures.

Research suggests that effective risk management practices are essential for enhancing operational resilience and ensuring the security of maritime environments. For instance, a study by Figueira and Cabral (2013) emphasizes that risk management frameworks help organizations identify, assess, and respond to risks systematically, thereby improving decision-making processes and operational outcomes. By integrating risk management into operational strategies, maritime organizations can better anticipate and mitigate potential security threats, enhancing their ability to maintain safe and secure maritime operations (Deason et al., 2015).

Moreover, the interaction effect observed between EOP and RM highlights the importance of comprehensive risk assessment and mitigation strategies in bolstering operational effectiveness. By actively managing risks associated with maritime activities, organizations can minimize disruptions, optimize resource allocation, and enhance overall operational resilience. This aligns with the concept of resilience engineering, which emphasizes the proactive management of risks to ensure system robustness and adaptability in dynamic operational environments (Hollnagel, 2010).

Practically, this finding suggests that maritime stakeholders should prioritize the development and implementation of robust risk management frameworks tailored to their specific operational contexts. This includes fostering a culture of risk awareness among personnel, investing in training and resources for risk assessment and mitigation, and continuously evaluating and refining risk management practices to align with evolving threats and challenges. By doing so, organizations can effectively leverage risk management as a strategic asset to strengthen operational effectiveness and ensure the long-term security and resilience of maritime operations.

4.4.15. Risk management as a moderation variable reinforcing the effectiveness of operations with maritime toughness

The impact of risk management variables (RM) as moderation factors that enhance the influence of operational effectiveness (EOP) on maritime resilience (MR) is demonstrated by a coefficient of 0.51, with a significance level of $p < 0.01$. This significant result rejects the null hypothesis (H0) concerning the RM coefficient, indicating that risk management practices effectively bolster the relationship between EOP and MR.

Effective risk management not only identifies potential threats and vulnerabilities but also mitigates their impact on maritime security initiatives. By implementing robust risk management frameworks, maritime stakeholders can anticipate and proactively address various challenges such as piracy, illegal fishing, and environmental hazards, thereby reinforcing the resilience of their operations. Literature underscores the significance of integrated risk management in maritime contexts. For instance, a study by Brooks and Stanley (2016) highlights how proactive risk management strategies are essential for enhancing maritime security by preemptively addressing vulnerabilities and enhancing organizational preparedness. Moreover, research by Chalkidou (2018) emphasizes the role of risk management in optimizing resource allocation and decision-making processes within maritime security frameworks. Therefore, incorporating risk management as a moderation variable not only strengthens the operational effectiveness of maritime initiatives but also ensures sustainable and resilient maritime practices in challenging environments.

4.4.16. Risk management as a moderation variable reinforcing command and control effectiveness with maritime security

The impact of risk management variables (RM) as moderation factors that enhance the influence of control command effectiveness (EKK) on maritime security (MS) is demonstrated to be statistically significant ($p < 0.01$), increasing it by 0.34. Given the significance level of $p < 0.01$, the null hypothesis (H0) concerning the RM coefficient reinforcing the effect of EKK on MS is rejected.

Risk management plays a pivotal role as a moderation variable in strengthening the effectiveness of command and control (C&C) mechanisms in ensuring maritime security. By integrating robust risk management practices into C&C frameworks, maritime organizations can proactively identify, assess, and mitigate potential threats and vulnerabilities. This proactive approach not only enhances the responsiveness and agility of C&C operations but also improves decision-making processes in handling maritime security challenges.

Research by van Duin et al. (2019) emphasizes the importance of risk management in optimizing C&C strategies to effectively manage security risks and crises in maritime environments. Similarly, studies by Jensen (2017) underscore how risk management frameworks contribute to enhancing situational awareness and operational resilience within maritime security operations. Therefore, by leveraging risk management as a moderation variable, maritime organizations can reinforce the effectiveness of their C&C systems, ultimately bolstering overall maritime security capabilities.

4.4.17. Risk management as a moderation variable reinforcing command and control effectiveness with maritime toughness

The effect of risk management variables (RM) as moderation variables that strengthen the effect of control command effectiveness (CCE) on maritime resilience (MS) by 0.38 with a level of significance of $p < 0.01$. Because of its significance level of $p < 0.01$, the H0 of the RM coefficient that strengthens the effect of EKK on MR is rejected.

Risk management serves as a crucial moderation variable that enhances the effectiveness of command and control (C&C) strategies in ensuring maritime toughness and resilience. In the context of maritime operations, incorporating robust risk management practices enables organizations to systematically identify, assess, and mitigate potential risks and threats. This proactive approach not only strengthens the operational capabilities of C&C systems but also enhances their adaptability and responsiveness in dynamic and challenging maritime environments.

Studies by Brooks and Stanley (2016) highlight how risk management frameworks contribute to the resilience of maritime operations by preemptively addressing vulnerabilities and improving organizational preparedness. Additionally, research by Chalkidou (2018) emphasizes the importance of integrating risk management strategies to optimize resource allocation and decision-making processes in maritime security.

By integrating risk management as a moderation variable, maritime organizations can bolster their ability to navigate complex operational landscapes, mitigate risks effectively, and maintain robust command and control over maritime activities. This approach not only enhances operational efficiency but also ensures sustainable maritime resilience in the face of evolving security challenges.

5. Conclusion

Based on the explanation above, the following conclusions can be drawn.

First, the seventeen hypotheses tested in the study are entirely acceptable with the following details:

1) H1: The capability of conceptual components positively influences the effectiveness of operations in supporting the success of maritime security strategies and maritime resilience in ALKI II. The effect of conceptual components (KSL) on operating effectiveness (EOP) is 0.20 with a significance level of $p < 0.01$. Because of its significance level $p < 0.01$, H0 of the KSL coefficient to EOP is rejected.
2) H2: The condition of the physical components has a positive influence on the effectiveness of operations to support the success of the maritime security strategy and maritime resilience in ALKI II. The effect of the physical component (FSK) on the effectiveness of operation (EOP) is 0.20 with a significance level of $p < 0.01$. Because of its significance level $p < 0.01$, H0 of the FSK coefficient to EOP is rejected.
3) H3: The condition of the moral component positively influences the effectiveness of operations to support the success of the maritime security strategy and maritime resilience in ALKI II. The effect of the moral component (MRL) on operating effectiveness (EOP) is 0.19, with a significance level of $p < 0.01$. Because of its significance level $p < 0.01$, H0 of the MRL coefficient to EOP is rejected.
4) H4: Puskodal capability positively influences command and control effectiveness to support the success of maritime security strategy and maritime resilience in ALKI II. The effect of the Puskodal component (PKL) on command effectiveness (EKK) is 0.62 with a significance level of $p < 0.01$. Because of its significance level $p < 0.01$, H0 of the coefficient of PKL to EKK is rejected.
5) H5: Command and control effectiveness positively influences operational effectiveness to support the success of maritime security strategies and maritime resilience in ALKI II. The effect of the control command effectiveness component (CCE) on operational effectiveness (EOP) is 0.33 with a significance level of $p < 0.01$. Because of its significance level $p < 0.01$, H0 of the EKK coefficient to EOP is rejected.
6) H6: Operation effectiveness positively influences the realization of maritime security in ALKI II. The effect of the Operation Effectiveness Component (EOP) on maritime security (MS) is 0.46 with a significance level of $p < 0.01$. Because of its significance level $p < 0.01$, H0 of the EOP coefficient to MS is rejected.
7) H7: Operation effectiveness positively influences the realization of maritime resilience in ALKI II. The effect of the Operation Effectiveness (EOP) component on maritime resilience (MR) is 0.30 with a significance level of $p < 0.01$. Because of its significance level of $p < 0.01$, H0 of the EOP coefficient against MR is rejected.
8) H8: Command and control effectiveness positively influences the realization of maritime security in ALKI II. The effect of the control command effectiveness component (EKK) on maritime security (MS) is 0.19 with a significance level of $p < 0.01$. Because of its significance level $p < 0.01$, H0 of the EKK coefficient to MS is rejected.
9) H9: Command and control effectiveness positively influences the realization of maritime resilience in ALKI II. The effect of the control command effectiveness component (EKK) on maritime resilience (MR) is 0.20 with a significance level

of $p < 0.01$. Because of its significance level $p < 0.01$, H0 of the EKK coefficient against MR is rejected.

10) H10: Resource multiplier management as a moderation variable reinforcing the effectiveness of operations with maritime security. The effect of resource multiplier (MRM) management variables as moderation variables that strengthen the effect of operation effectiveness (EOP) on maritime security (MS) is 0.38 with a significance level of $p < 0.01$. Because of its significance level $p < 0.01$, H0 of the MRM coefficient that strengthens the influence of EOP on MS is rejected.
11) H11: Resource multiplier management as a moderation variable reinforcing the effectiveness of operations with maritime resilience. The effect of resource multiplier (MRM) management variables as moderation variables that strengthen the effect of operating effectiveness (EOP) on maritime resilience (MR) is 0.42 with a significance level of $p < 0.01$. Because of its significance level $p < 0.01$, the H0 of the MRM coefficient that strengthens the effect of EOP on MR is rejected.
12) H12: Resource multiplier management as a moderation variable reinforcing command and control effectiveness with maritime security. The effect of resource multiplier (MRM) management variables as moderation variables that strengthen the effect of control command effectiveness (EKK) on maritime security (MS) is 0.35 with a significance level of $p < 0.01$. Because of its significance level $p < 0.01$, H0 of the MRM coefficient that strengthens the effect of EKK on MS is rejected.
13) H13: Resource multiplier management as a moderation variable reinforcing command and control effectiveness with maritime resilience. The effect of resource multiplier (MRM) management variables as moderation variables that strengthen the effect of control command effectiveness (EKK) on maritime resilience (MR) is 0.18 with a significance level of $p < 0.01$. Because of its significance level $p < 0.01$, H0 of the MRM coefficient that strengthens the effect of EKK on MR is rejected.
14) H14: Risk management as a moderation variable reinforcing the effectiveness of operations with maritime security. The effect of risk management variables (RM) as moderation variables that strengthen the effect of operating effectiveness (EOP) on maritime security (MS) is 0.29 with a significance level of $p < 0.01$. Because of its significance level $p < 0.01$, H0 of the RM coefficient that strengthens the effect of EOP on MS is rejected.
15) H15: Risk management as a moderation variable reinforcing the effectiveness of operations with maritime resilience. The effect of risk management variables (RM) as moderation variables that strengthen the effect of operation effectiveness (EOP) on maritime resilience (MR) is 0.51 with a significance level of $p < 0.01$. Because of its significance level $p < 0.01$, the H0 of the RM coefficient that strengthens the influence of EOP on MR is rejected.
16) H16: Risk management as a moderation variable reinforcing command and control effectiveness with maritime security. The effect of risk management variables (RM) as moderation variables that strengthen the effect of control command effectiveness (EKK) on maritime security (MS) is 0.34 with a

significance level of $p < 0.01$. Because of its significance level $p < 0.01$, H0 of the RM coefficient that strengthens the effect of EKK on MS is rejected.

17) H17: Risk management as a moderation variable reinforcing command and control effectiveness with maritime resilience. The effect of risk management variables (RM) as moderation variables that strengthen the effect of control command effectiveness (CCE) on maritime resilience (MR) is 0.38 with a significance level of $p < 0.01$. Because of its significance level $p < 0.01$, the H0 of the RM coefficient that strengthens the effect of EKK on MR is rejected.

This research can be developed by further researchers to analyze efficiency in implementing a maritime security strategy in ALKI II through operational efficiency and optimization of command and control. Further researchers can also analyze the effect of the availability of adequate navigation infrastructure along ALKI II, the implementation of the Traffic Separation Scheme (TSS) in the Lombok Strait, and the completeness of legal tools in supporting the success of the maritime security and resilience strategy in ALKI II.

Author contributions: Conceptualization, ASH; methodology, ASH, MK, AEW and SS; software, ASH; validation, MK, AEW and SS; formal analysis, ASH; investigation, ASH; resources, ASH; data curation, ASH; writing—original raft preparation, ASH; writing—review and editing, MK, AEW and SS; visualization, ASH. All authors have read and agreed to the published version of the manuscript.

Conflict of interest: The authors declare no conflict of interest.

References

Albert, David, S., John, J., et al. (2005). Network Centric Warfare, Developing and Leveraging Information Superiority. Washington DC: CCRP Publication Series.

Aven, T. (2016). Risk assessment and risk management: Review of recent advances on their foundation. European Journal of Operational Research, 253(1), 1–13. https://doi.org/10.1016/j.ejor.2015.12.023

Bateman, S. (2018). Maritime Security Cooperation in the Indo-Pacific: Perspectives from ASEAN. Journal of Indo-Pacific Affairs, 1(1), 55-78.

Brooks, S., & Stanley, D. (2016). Maritime security and risk analysis. In: Maritime Security. Routledge. pp. 45-67.

Bucur-Marcu, H., Fluri, P., Tagarev, T.(editors) (2009). Defence Management: An Introduction. Geneva: Procon Ltd

Bueger, C. (2015). What is maritime security? Marine Policy, 53, 159–164. https://doi.org/10.1016/j.marpol.2014.12.005

Bunker, R. J., & Albanese, J. S. (2011). Handbook of Defense Economics: Defense in a Globalized World. Elsevier.

Buntoro, Kresno (2017). Nusantara ALKI (Alur Laut Kepulauan Indonesia). Depok: PT Rajagrafindo Persada.

Chalkidou, K. (2018). Managing maritime security: A risk management approach. Journal of Transportation Security, 11(2), 143-159.

Choi, S. (2013). The dynamics of defense: A technological and operational analysis of the Korean defense industry. Springer Science & Business Media.

Cresswell, john W. (2016). Research Design Qualitative, Quantitative, and Mixed Methods Approaches (Indonesian). Yogyakarta: Pustaka Pelajar.

Deason, J., Duffy, J. A., & Gesell, L. (2015). Risk management in the U.S. Coast Guard. Journal of Transportation Security, 8(4), 271-290.

Djalal, H. (2010). An Archipelagic State Towards a Maritime State (Indonesian). Jakarta: Lembaga Laut Indonesia.

Figueira, J., & Cabral, P. (2013). Risk management in ports: A quantitative analysis. Maritime Economics & Logistics, 15(3), 303-321.

Gekara, V. O., & Sampson, H. (2009). A critical examination of seafarers' labour market participation patterns and job perceptions in the context of an extended maritime career. Marine Policy, 33(4), 608-616.

Gruber, T., Lenssen, L., & Broring, S. (2017). Blockchain for the Internet of Things: A systematic literature review. In: Proceedings of the 50th Hawaii International Conference on System Sciences; Hilton Waikoloa Village, Hawaii.

Hair, J. F., Black, W., Babin, B. et al. (2011). Multivariate Data Analysis: A Global Perspective, 7th ed. New Jearsey: Pearson.

Hillson, D., & Murray-Webster, R. (2017). Understanding and Managing Risk Attitude. Routledge. https://doi.org/10.4324/9781315235448

Hollnagel, E. (2010). Resilience engineering: Concepts and precepts. Ashgate Publishing, Ltd.

Jensen, K. L. (2017). Risk management and resilience in ports: A review. In: Security and Resilience in Ports. Routledge. pp. 101-120.

Kamal, M., & Pratikto, H. (2019). The Development Strategy of Maritime Industry in Supporting National Sea Transportation in Indonesia. Journal of Maritime Studies and National Integration, 3(1), 32-45.

Lam, J. S. L., & Yap, W. Y. (2011). Dynamics of liner shipping network and port connectivity in supply chain systems: analysis on East Asia. Journal of Transport Geography, 19(6), 1272–1281. https://doi.org/10.1016/j.jtrangeo.2011.06.007

Lykke, A. F (1989). Defining Military Strategy. Military Review, 77(1).

Maharani, C. (2022). Pertahanan Ibu Kota Negara Strategi dan Gelar Militer, Jakarta: Laboratorium Indonesia.

Nugraha, P. (2016). Feasibility study of pt pal indonesia (persero) for the construction of missile escort destroyers (PKR)(Indonesian). Jurnal Ketahanan Nasional, 22(3), 255. https://doi.org/10.22146/jkn.16354

Omer, M., Mostashari, A., Nilchiani, R., et al. (2012). A framework for assessing resiliency of maritime transportation systems. Maritime Policy & Management, 39(7), 685–703. https://doi.org/10.1080/03088839.2012.689878

Richard, N. C. (2016). The life and work of General Andrew J. Goodpaster: Best Practices in National Security Affairs. Amerika Serikat.

Rosen, M. (2014). The future of military robotics: Leveraging technology for force modernization and military advantage. CreateSpace Independent Publishing Platform.

Roumboutsos, A., Tavasszy, L. A., & Van Der Heijden, R. E. (2017). The impact of spatial and governance configurations on port performance: Evidence from North-West Europe. Journal of Transport Geography, 58, 216-228.

Sholihin, M., Ratmono, D. (2020). Analisis SEM-PLS dengan WarpPLS 7.0. Yogyakarta: CV Andi Offset.

Sitohang, J. (2008). Indonesia's Maritime Territorial Boundaries in the South China Sea: Indonesia's Interests in Natuna Waters. (Indonesian) Jakarta: LIPI Press.

Sobaruddin, D. P., Armawi, A., & Martono, E. (2017). Model Traffic Separation Scheme (TSS) Di Alur Laut Kepulauan Indonesia (AlKI) I Di Selat Sunda Dalam Mewujudkan Ketahanan Wilayah. Jurnal Ketahanan Nasional, 23(1), 104. https://doi.org/10.22146/jkn.22070

Soedewo, Arie (2015). Enforcement of Provisions for Foreign-Flagged Vessels to Pass through ALKI II Viewed from the Perspective of Indonesian State Law and UNCLOS 1982 (Indonesian). Jakarta: Mabes TNI AL.

Sugiyono, T., Warka, I W., Suwarno, P. (2020). Sea Defense Strategy to Handle Transnational Drug Crime in Sunda Strait (Indonesian). Jurnal Prodi Strategi Pertahanan Laut Universitas Pertahanan, 6(2).

Till, G. (2009). Seapower, 2nd ed. Routledge. https://doi.org/10.4324/9780203880487

Tracy, B. (2002). Victory! Applying the Proven Principles of Military Strategy to Avhieve Success in Your Business and Personal Life. New York: Amacom.

van Duin, J. (2019). Maritime cybersecurity: A risk management approach. WMU Journal of Maritime Affairs, 18(2), 315-332.

Van Geenhuizen, M., & Nijkamp, P. (2008). Multicriteria analysis of transport investments: A comparison of the Netherlands and the United Kingdom. Springer Science & Business Media.

Vego, M. (2013). Operational Warfare at Sea: Theory and Practice, 3rd ed. Routledge.

Vego, M. (2016a). Command at Sea: Theory and Practice, 4th ed. Routledge.

Vego, M. (2016b). Maritime Strategy and Sea Control. Routledge. https://doi.org/10.4324/9781315694528

Wade, N. M. (2010), The Naval Operations and Planning Smart Book, Guide to Designing, Planning and Conducting Maritime Operations. Lakeland: The Lightning Press.

Wahyono, S. K. (1996). Sea Defense Strategy for National Resilience (Indonesian). Journal Ketahanan Nasional, 1(1).

Yang, Y., & Sia, A. (2020). The Role of Technology in Enhancing Maritime Security: A Study on Surveillance and Early Detection Systems. Maritime Policy & Management, 47(5), 674-690.

Yarger, H. R. (2012), Toward a Theory of Strategy: Art Lykke and The U.S. Army War College Strategy Model. Pennsylvania: U.S. Army War College.