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Analysis of National Security Risks in Indonesia's Three Trouble Spots as an Impact of the Development of BRI and FOIP in the Southeast Asian Region

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ABSTRACT

China is developing a Belt and Road Initiative (BRI) strategy to increase its geopolitical influence in the Southeast Asian region. The United States made the Free and Open Indo-Pacific America (FOIP) policy to offset China's geopolitical influence.This study aims to determine the national security risks that occur in 3 touble spots in Indonesia as a result of the development of BRI and FOIP in the Southeast Asian region. This study uses the Analytical Hierarchy Process (AHP) Method and Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) approaches. Risk analysis on three Indonesian trouble spots shows that the area with the greatest risk is in the trouble spot 1 area (North Natuna Sea) with a value of 0.202 at level 1 very low. Meanwhile, the trouble spot 2 area (Ambalat) with a value of 0.040 is at level 1 very low and the trouble spot 3 area (Papua) with a value of 0.164 is at level 1 very low. This analysis shows that adjusting the weights and scores used in evaluating national security trouble spots can improve the decision-making process, as it shows the important role these factors play in risk ratings in each region

INTRODUCTION

Belt and Road Initiative (BRI) implemented by China and Free and Open Indo-Pacific (FOIP) implemented by the United States (US) are two major geopolitical strategies aimed at expanding each country's influence beyond their respective regions (Shanahan, 2019). "Both initiatives have significant implications for the national security of countries in the Indo-Pacific region, including Indonesia. The US, with a vision articulated during the Trump Administration and built upon the Asia rebalancing pivot during the Obama Administration, focuses on preserving freedom, openness, regional security, and stability, as well as ensuring freedom of access to shared domains to safeguard US and allied interests and prevent China from establishing exclusive spheres of influence (Al, 2020). On the other hand, China's vision, based on a China-centric model, aims to expand its power and influence in the region through the BRI, which promotes economic integration and creates greater regional dependency on China through infrastructure expansion and economic investments (Al, 2020). While not all of the goals of the US and China directly clash, both countries are advancing different visions for the Indo-Pacific region to pursue their respective geopolitical objectives. One area significantly affected is Southeast Asia, including Indonesia, strategically located at the crossroads of global maritime traffic between Australia and Asia, and the Pacific and Indian Oceans. This strategic position makes Indonesia a key link in international production chains and a focal point in China's geopolitical ambitions. The Indo-Pacific region is expected by the US, Japan, India, and Australia to enhance collaboration in facing China's growing influence, while Indonesia, as the largest country in Southeast Asia and leader of ASEAN, strives to balance the geopolitical influences of these two major powers (Pratiwi et al., 2021).

Indonesia faces a major challenge in protecting its sovereignty from potential threats arising from its strategic position and abundant natural resources. The BRI and FOIP policies have significant implications for Indonesia's national security at three vulnerable points: the Natuna Sea, Papua, and Ambalat, exacerbating geopolitical tensions and posing a challenge to Indonesia's efforts to defend its sovereignty and secure its natural resources (Boys, 2022). Research (Ali et al., 2021) shows that the determination of national jurisdictional boundaries often encounters obstacles, especially by archipelagic countries interested in obtaining marine resources. Cases such as Sipadan and Ligitan, the Timor Strait, the Ambalat Sea, and the South China Sea have triggered tensions and conflicts over BRI and FOIP policies (Ali et al., 2021). The impact of this policy includes increasing geopolitical tensions and the risk of armed conflict in strategic areas, which could disrupt international shipping lanes and affect Indonesia's energy security (Putra et al., 2023). The influence of the BRI and FOIP encompasses economic, political, security, and social aspects, with the BRI increasing debt risk and economic dominance by China, while the FOIP encourages free trade and market-driven economic collaboration (Li et al., 2021; Pradhan, 2021). In terms of security, the BRI raises concerns about China's military influence, while FOIP focuses on maritime security and regional stability through military cooperation with U.S. allies (Liff, 2019); Scott, 2020).

Based on this phenomenon, it can be identified in this study that the increasing geopolitical competition between the US and China can exacerbate tensions in the Indo-Pacific region and complicate diplomatic efforts and multilateral

cooperation (Pradhan, 2021). This is an aspect that is considered to be less profound about the readiness of the long-term impact of BRI and FOIP on political and economic stability in recipient countries and limited in-depth research on how countries such as Indonesia can effectively navigate this dynamic (Ali et al., 2021). Thus, several threats have emerged that disrupt national security due to dependence on foreign investment through the BRI as well as increased risk of conflict and foreign intervention due to the militaristic approach of FOIP (Putra et al., 2023).

To analyze Indonesia's national security risks related to BRI and FOIP, appropriate theoretical approaches include national security theory, geopolitical theory, and risk analysis theory. National security theory aids in understanding how countries identify and respond to various threats to the sovereignty, territorial integrity, and safety of their citizens (Buzan et al., 1998). Geopolitical theory examines how geographical factors affect international politics and power relations between countries, which is relevant in understanding Indonesia's strategic position at the crossroads of the world's maritime traffic (Brzezinski, 1997). Risk analysis theory provides a framework for assessing and managing risk by identifying threats, vulnerabilities, and possible impacts (Kaplan' & Garrick2, 1981).

This research was conducted due to the significant strategic impact of the Belt and Road Initiative (BRI) and Free and Open Indo-Pacific (FOIP) on Indonesia's national security. Both initiatives have created complex dynamics in regional geopolitics, including rising tensions in strategic areas such as the Natuna Sea, Papua, and Ambalat. The presence of foreign powers in these areas increases risks to Indonesia's sovereignty and security and complicates efforts to maintain stability in the region.

The Analytical Hierarchy Process (AHP) method and the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) can be used in this study to analyze national security risks. AHP helps determine the weight of each risk criterion based on the subjective assessment of experts, while TOPSIS is used to sort alternatives based on their proximity to the ideal solution. This approach allows for the identification of the most critical risk scenarios and the development of effective mitigation strategies (Saaty, 1980; Hwang, 1981).

This research is expected to provide a deeper understanding of national security risks arising from the implementation of BRI and FOIP in Indonesia, as well as help formulate effective mitigation strategies. By analyzing factors such as threats, vulnerabilities, and impacts, this study will help the Indonesian government and other stakeholders to identify vulnerable points and design concrete measures to mitigate those risks. The main contribution of this research is to provide a deeper insight into the geopolitical complexity of the Indo-Pacific region and its impact on Indonesia's national security. With a better understanding of the risks and challenges it faces, Indonesia can take more effective steps to protect its sovereignty and ensure regional stability.

LITERATURE REVIEW

1. National Security

National Security will be a strong foundation in this research. According to Alan Collins in his research (Omoroje et al., 2021), National Security Theory is defined as "the need to maintain the survival of the nation-state through the use of economic, military, and political force and the exercise of diplomacy." In unraveling this concept, the focus will be on these aspects, highlighting the role of the economy, military, and diplomacy in

ensuring the stability and sustainability of the country.

The research will also involve an in-depth understanding of asymmetric warfare theory and communication theory, which are essential elements in the rapidly evolving national security context. Asymmetric warfare theory highlights the strategies and tactics used by significantly weaker militarily parties against stronger parties, while communication theory considers the importance of effective communication in preventing and resolving conflicts.

2. Geopolitical

The definition of political geography is a science that studies the relationship between political life and activities with the natural conditions of a country or in other words studies the states and it's natural enviroment (Tampubolon et al., 2022). In addition, political geography also studies the country as a regional politics that includes both internal geographical factors, as well as external, namely relations between countries (Syuryansyah, 2022). Political objects and geography are the analysis and relations between countries and adaptation to environmental conditions within the country. Thus political geography can be interpreted as "Is the geography of states and provide a geographical interpretation of international relations".

Geopolitics is a study that studies the relationship between geography, political power, and international dynamics. The theory attempts to understand how geographical factors such as location, topography, natural resources, and access to trade routes affect political decisions, security strategies, and power dynamics between countries on the global stage. Geopolitical theory involves the analysis of a country's efforts to expand its influence, protect its national interests, and interact with other countries in competition or cooperation to achieve certain political and economic goals (Erickson, 2018; Limaye, 2018).

3. Risk

Risk is the potential to gain or lose something of value. Values (such as physical health, social status, emotional well-being or financial wealth) can be gained or lost when taking risks resulting from an action or inaction, both foreseeable and unpredictable. Risk analysis is to determine the magnitude of a risk reflected in the likelihood and severity it causes. There are many techniques used to conduct risk analysis, both qualitative, semi-and quantitative. Qualitative risk analysis analyzes and assesses risks by comparing impact and opportunity parameters by comparing predetermined matrices. Semi-quantitative risk analysis has a method that is almost similar to the quantitative method (Raihan & Fitriani, 2023). However, the difference lies in the value/score that has been determined according to the risk. Quantitative risk analysis is carried out by determining the value of each parameter obtained from the results of representative analysis such as simulated statistical analysis. The parameters used in analyzing and assessing risk are threats, vulnerabilities, and impacts.

A threat is something that can interfere with the activities of an organization (Kurnia et al., 2022). Emerging threats include military, economic, and sovereignty aspects, which have the potential and real to increase tensions and risk of conflict in the region.

Vulnerability analysis is used as: (1) a diagnostic tool to understand the problems and factors that cause vulnerability, (2) a planning tool as a basis for determining the priority of activities and the sequence of planned activities, (3) a risk measurement tool to assess specific risks, and (4) a tool to empower and mobilize vulnerable community groups. Vulnerability analysis is part of the risk analysis that enables stakeholders to counter terrorism (Purwanto et al., 2021). The vulnerabilities that arise are mainly related to infrastructure, economy, and politics, reflecting Indonesia's dependence on foreign investment and trade as well as the vulnerability of infrastructure to cyberattacks and sabotage.

Impact is the level or magnitude of influence on other activities when unwanted activities occur. Impact (consequences) The assessment is carried out to assess the consequences/impacts of the possible occurrence of various identified threats to the

facilities under review. The assessment is based on criteria, including casualties, injuries, loss or damage to buildings/assets and Impact on the economic and/or socio-political welfare of the country/nation (Octavian et al., 2020). Impact assessments in terms of the number of fatalities and potential injuries should consider the worst-case scenario of full occupancy capacity at the facility under review, economic, social, and environmental aspects, which are detrimental to economic growth, social stability, and environmental sustainability. The criteria for assessing damage to buildings/assets must consider the cost of building the building/asset. Assessment of loss of primary services must be in accordance with the recovery period for the reconstruction of buildings/assets and/or replacement of supporting equipment that determines the overall operation of the facility (Chang et al., 2021).

This analysis is a reflection of the complex risks affecting Indonesia's national security and demands a comprehensive and adaptive response from the government and other stakeholders. The nature of these threats, vulnerabilities, and impacts varies from potential, reflecting the likelihood of future occurrence, to real, already occurring or ongoing. This risk analysis is proactive, with the aim of identifying, evaluating, and mitigating risks associated with the implementation of BRI and FOIP, as well as to help formulate effective mitigation strategies in maintaining Indonesia's national security.

Risk analysis can be written with a risk formula (Chang et al., 2021):

Risk = Threat (T) x Vulnerability (V) x Impact (I)

(Chang et al., 2021), explaining that threats will exploit vulnerabilities so that they have an impact on the system, thus making it a risk to an organization. Therefore, if no threats, vulnerabilities and impacts are found, then there is no risk.

METHODS

1. Data Collection Techniques

This study uses three data collection techniques, namely in-depth interviews, observations, and documentation studies to obtain primary and secondary data. Primary data were obtained directly from the place and subject of the study, while qualitative data, according to (Sugiyono, 2020), consisting of words and actions. The interview technique involves systematic questions that are asked openly to the interviewee who understands the purpose of the interview. Field observations were conducted to accurately document data and evidence, particularly in identifying potential risks in three vulnerable areas in Indonesia: the North Natuna Sea, Ambalat, and Papua, where these areas are the main focus of research due to their strategic and geopolitically important natural resources and are often a source of territorial tensions and conflicts. The questionnaire, which is divided into four parts, is used to collect respondents' information, provide filling instructions, and assess risk through predetermined dimensional weights.

2. Content Validation Index

The Content Validity Index (CVI) stands as an important method for assessing the validity of an instrument's content, which is widely recognized for its application in various research domains. It measures the extent to which experts agree on the relevance or representativeness of an instrument item, offering insight into the validity of its content both at the item level (Item level CVI or I-CVI) and across instruments (Instrument-level CVI). The calculation of CVI is supported by an expert evaluation of each item, based on the relevance or representativeness of its content (Almanaksreh, Moles and Chen, 2018).

In assessing the validity of content, this study uses the item-level content validity index (I-CVI) and the scale-level average content validity index (S-CVI/Ave). The S-CVI/Ave is determined by dividing the sum of the I-CVI scores by the number of items. An S-CVI/Ave $\geq$ of 0.8 is considered acceptable, while an S-CVI/Ave $\geq$ of 0.90 indicates excellent overall content validity. The I-CVI, on the other hand, is calculated as the number of experts who assessed item $\geq$3 divided by the total number of experts, with an I-CVI of $\geq$0.78 acceptable. The literature shows that for a new

assessment instrument to be considered valid, it must achieve a total CVI of ≥0.90 or 90% and an I-CVI of ≥0.78 or 78% (Marisa, 2021).

3. Analytical Hierarchy Process (AHP)

AHP was developed by Saaty (2013) as a model for solving decision problems. AHP ensures that quantitative and qualitative variables can be evaluated together by considering the priorities of decision-makers. The stages in the AHP process can be summarized as follows:

a. Define criteria

Identify risk analysis criteria that affect three trouble spots in Indonesia as a result of the development of BRI and FOIP. Each risk analysis criterion will be formed by a number of sub-criteria that are owned as risk assessments that can occur.

b. Preparing objectives, criteria, sub-criteria and alternatives in the form of a hierarchy of decisions

Preparing objectives, criteria, sub-criteria and alternatives that are in accordance with the discussion of the research, where in this study a number of risk analysis criteria are prepared that affect the three trouble spots in Indonesia as an impact on the development of BRI and FOIP which can also be influenced by sub-criteria so that it can facilitate the assessment of the criteria being studied.

c. Provides a saaty scale assessment on a criterion-paired comparison matrix

Conducting an assessment of each criterion and risk analysis sub-criteria through a questionnaire with a scale of 1 – 9 which is in accordance with the condition of the research object, namely three trouble spots in Indonesia (North Natuna Sea, Ambalat Block and Papua).

d. Conduct consistency testing against comparisons between criteria

Conducting CI and CR tests with the formula:

$$\mathbf{CI = (\lambda max - n) / (n - 1)}$$

Where:

n = number of elements

CR = CI/RI

Where:

CR = Consistency Ratio

CI = Consistency Index

RI = Random Consistency Index

If the value is more than 10%, the judgement assessment must be corrected, but if the consistency ratio (CI/RI) is less than or equal to 0.1, the calculation result can be declared correct.

Table 1. Index Random Value

Matrix Value (n)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Random Index (RI)	0,00	0,00	0,58	0,90	1,12	1,24	1,32	1,41	1,45	1,49

Source: Saaty (2013)

e. Ranking

After CI and CR measurements are made, the weight value of the assessment of the criteria and sub-criteria of risk analysis can be obtained, then the ranking of the weight value obtained can be carried out. Thus, it can be known how big or small the risks that occur in Indonesia's three trouble spots (North Natuna Sea, Ambalat Block and Papua) are based on the criteria and sub-criteria studied.

4. Technique for Order by Similarity to Ideal Solution (TOPSIS)

a. Create a national security risk analysis decision-making matrix

The purpose of making a national security risk analysis decision-making matrix is to determine the value of the level of risk analysis in each risk analysis criterion in three Indonesian trouble spots (North Natuna Sea, Ambalat Block and Papua).

b. Decision matrix normalization

Matrix normalization is carried out to unite each element of the matrix so that the elements in the matrix have a uniform value scale.

$$X = \begin{bmatrix} X_{11} & X_{12} & \dots & X_{1n} \\ X_{21} & X_{22} & \dots & X_{2n} \\ \dots & \dots & \dots & \dots \\ X_{m1} & X_{m2} & \dots & X_{mn} \end{bmatrix}$$

$$r_{ij} = \frac{X_{ij}}{\sqrt{\sum_{k=1}^{m} X_{kj}^2}}$$

c. Shifting the risk matrix with the weight of each AHP criterion. To determine the weight of the risk matrix that has been normalized.

$$y_{ij} = w_j x r_{ij}$$

Where: *i = I, ..., m and j = I, ..., n*

$$Y = [w_1 \; w_2 \; \dots \; w_m] \begin{bmatrix} r_{11} & r_{12} & \dots & r_{1n} \\ r_{21} & r_{22} & \dots & r_{2n} \\ \dots & \dots & \dots & \dots \\ r_{m1} & r_{m2} & \dots & r_{mn} \end{bmatrix}$$

$$= \begin{bmatrix} w_1 x r_{11} & w_2 x r_{12} & \dots & w_n x r_{1n} \\ w_1 x r_{21} & w_2 x r_{22} & \dots & w_n x r_{2n} \\ \dots & \dots & \dots & \dots \\ w_1 x r_{m1} & w_2 x r_{m2} & \dots & w_n x r_{mn} \end{bmatrix}$$

d. Determining the positive ideal solution matrix and the negative ideal solution matrix

Calculate weighted normalization, to find out the ideal solution of positive and negative and the value of positive and negative proximity to get the final value of a criterion.

$$A^- = (y_1^-, y_2^-, \dots \dots, y_n^-)$$

$$A^+ = (y_1^+, y_2^+, \dots \dots, y_n^+)$$

e. Determining the distance of each alternative

To determine the distance between the value of each alternative and the matrix of the positive ideal solution and the matrix of the negative ideal solution.

$$D_i^- = \sqrt{\sum_{j=i}^{n} (y_{ij} - y_j^-)^2}$$

$$D_i^+ = \sqrt{\sum_{j=i}^{n} (y_{ij} - y_j^+)^2}$$

f. Calculating the value of each alternative's risk preference following the outcome of the decision

To find out the value of risk preference to obtain the ideal solution in making decisions.

$$V_i = \frac{D_i^-}{D_i^- + D_i^+}$$

5. Conceptual Framework

This research was conducted in three Trouble spot Indonesia, precisely in the North Natuna Sea, Ambalat and Papua areas. This study aims to determine the national security risk factors in Three trouble spots Indonesia as a result of the development of BRI and FOIP in the Southeast Asian region, with a focus on this as a case study and for the development of strategic initiatives. The determination of risk factors was determined through a literature study of previous research that had been conducted by (Octavian et al., 2020).

This study uses a qualitative approach in descriptive statistics that are used as a measure and explain the national security risks that can occur using the Analytical Hierarchy Process (AHP) and Tachnique for Order by Similarity to Ideal Solution (TOPSIS) methods.

The analysis begins with the application of the AHP method to assess risk factors and set priorities to address national security. Then, followed by the TOPSIS method to classify the level of risk as shown in the study (Octavian et al., 2020), along with sensitivity analysis to evaluate the reliability of results based on the weighting of the criteria (Axelsson et al., 2021).

This study involved 10 experts or experts based on the criteria set in conducting assessments through questionnaires to collect data on the criteria using a scale of 1-9 for the AHP method and framing risk assessment questions on a 5-point likert scale for the TOPSIS method. The experts involved are mostly senior officials at Indonesia's three trouble spots .

The criteria for selecting members are set based on several key factors (Fletcher & Griffiths, 2020; Nguyen et al., 2022; Khalilzadeh et al., 2020).

First, the expert must be at the decision-making level in national security operations and have a position with clear duties, responsibilities, and authority. Second, they must have a minimum of 10 years of service experience, particularly in maritime intelligence operations. Third, they must be practitioners or academics who understand maritime issues in three vulnerable points of Indonesia: the North Natuna Sea, Ambalat, and Papua. Finally, they must have served or carried out operations in these areas.

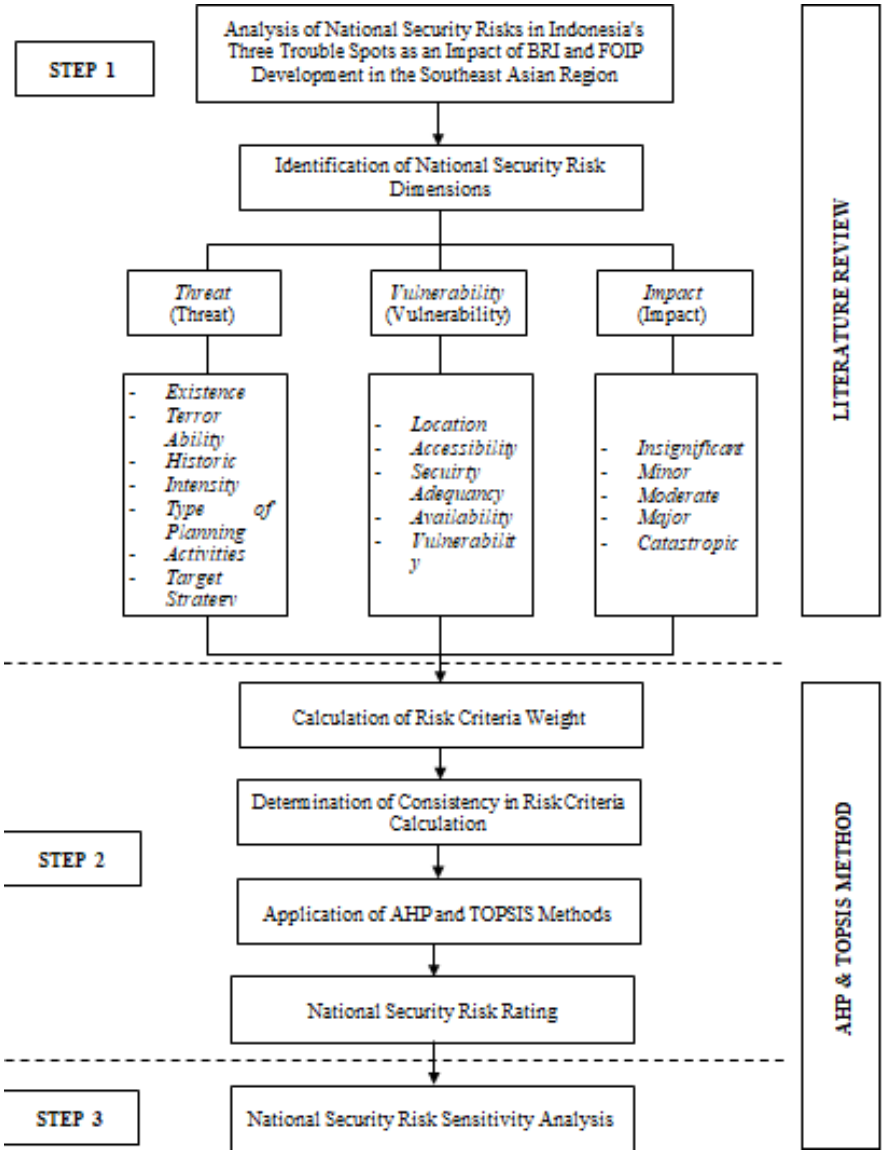

Figure 1. Conceptual Framework for National Security Risk Analysis
Source: Putra et al., (2023), Singh & Sarkar, (2019), Octavian et al., (2020)

In this study, there are several stages to achieve the expected goals through several research steps as follows:

Step 1 In this study, we identified national security risks by conducting a literature study in understanding the dimensions and risk factors of national security that are relevant to the three trouble spots in Indonesia and considering them in accordance with the impact of the development of BRI and FOIP. In the idetification of the dimensions and risk factors of this study, three main components of risk are obtained in accordance with the research (Octavian et al., 2020) i.e. threats (threat), vulnerability (vulnerability) and impact (Impact).

Step 2 in this study involves the application of the AHP and TOPSIS methods by calculating the weight of risk criteria using AHP which helps in problem structuring and decision-making by comparing criteria in pairs. After that the criteria weights are determined, the consistency of the assessment is checked to ensure the consistency of the data. Then, the AHP and TOPSIS methods are used to conduct national security risk ratings. The AHP method is used to determine the weight of the criteria, while TOPSIS is used to assess and sort alternatives based on their proximity to the ideal solution.

Table 2. Value of Risk Analysis Level for Each Criterion

Likert Score	***Risk Analysis Level***		
	Threat	***Vulnerability***	***Impact***
5	Very High	Very High	Catstropic
4	High	High	Significant
3	Medium	Medium	Moderate
2	Low	Low	Minor
1	Very Low	Very Low	Insignificant

(Octavian et al., 2020; Putra et al., 2023)

Table 3. Level Value Rating of Each Risk Analysis Criterion

Likert Score	**Description of Risk Analysis**		
	Threat	***Vulnerability***	***Impact***
5	State-sponsored maritime attacks are carried out for the sake of economic dominance, information control or national instability.	One or more major weaknesses have been identified that make the region highly vulnerable to attack. The Fleet Command does not have the ability to counter the occurrence of threats.	The threat caused a total loss of territory. There are very serious consequences that affect national security.
4	National security risks in Indonesia's three trouble spots are caused by differences in natural resources in each country	One or more major weaknesses have been identified thus making the border region particularly vulnerable to attack. The Fleet Command has a low ability to counter threats.	This threat causes territorial damage. Regional defense operations need to be improved. There is a high level of national security disturbance.
3	National security risks in Indonesia's three trouble spots occur for prohibited purposes by individuals or groups of countries.	A weakness has been identified that makes the border region quite vulnerable to attacks. The Fleet Command has a reasonable ability to counter the occurrence of threats.	This threat causes moderate damage to the area. Regional defense operations were disrupted. It takes longer time (e.g. more than 12 hours) to repair the defensive area. The threat caused great damage to the territory.

Likert Score	**Description of Risk Analysis**		
	Threat	***Vulnerability***	***Impact***
2	Territorial disputes or taking resources on border areas are also considered violations of the regulations made by each country concerned	Minor weaknesses have been identified that slightly increase the region's vulnerability to attack. The Fleet Command has good capabilities in countering threats	The threat causes damage to marginal areas. The operation of the defense area was slightly disrupted. It takes a short time (for example, less than 6 hours) to fix the region.
1	Representing ideological motivations, individuals/groups of countries take resources on border areas to exploit their targets	There are no drawbacks. The Fleet Command has excellent capabilities in countering threats.	The consequences of such threats are limited. It only requires a little bit of territorial defense.

(Hosseinnia et al., 2018; Octavian et al., 2020; Putra et al., 2023)

Table 4. Risk Assessment Level

AHP Scale	Definition	Description	Likert	Probability Value	Risk Level	Colour
1	Equally Important	Two elements contribute equally to the goal	1	0 – 0,2	Very Low	
3	A Little More Important	Experience and judgment slightly prefer one element over another	2	0,21 – 0,4	Low	
5	More Important	Experience and judgment strongly favor one element over another	3	0,41 – 0,6	Medium	
7	Very Important	An element is highly superior to other elements and its dominance is shown in practice	4	0,61 – 0,8	High	
9	Absolutely More Important	Evidence supporting one activity over others is the highest level of affirmation	5	0,81 – 1,0	Extreme	
2,4,6,8	Middle Score	When in doubt between two nearby AHP values				

Source: Sudarsana, (2021); Liu et al., (2012); Putra, et al (2023)

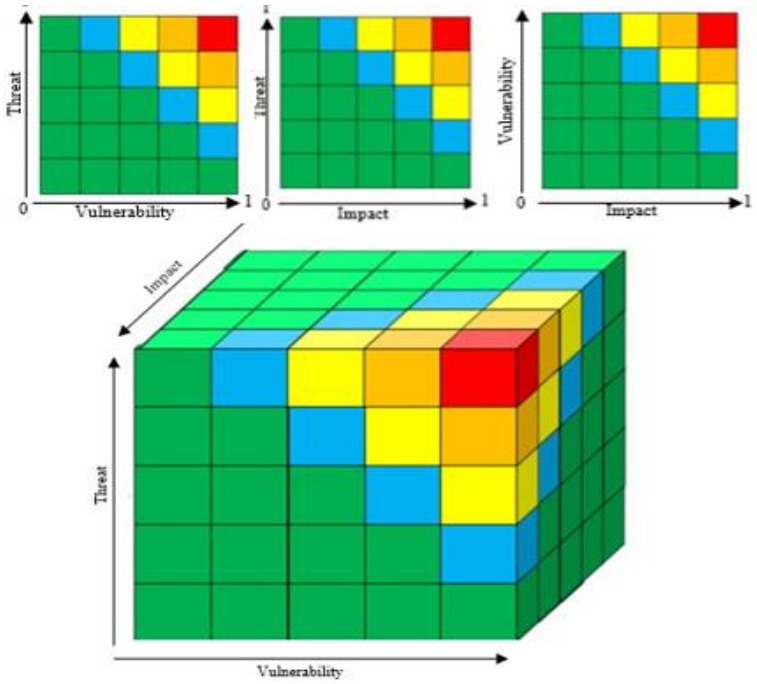

Figure 2. 3D Risk Assessment Model

Source: Processed Through Sudarsana Research (2021); Liu, et al (2012); Putra, et al (2023)

Step 3 will be analyzed for national security risk sensitivity. The result of the implementation of AHP and TOPSIS is a national security risk rating that shows risk priority based on weighting and assessment of predetermined criteria. Furthermore, a sensitivity analysis was carried out to evaluate how changes in the weight of the criteria or basic assumptions affected the results of the risk rating. This analysis is important to ensure that the decisions taken are robust and can withstand various scenarios. This systematic process results in a structured, data-driven risk rating, which policymakers can use to improve Indonesia's national security.

RESULTS AND DISCUSSION

1. Identification of Impact Factors and Development Strategies

Identification of impact factors and development strategies. This section outlines the systematic approach taken to determine risk factors, namely: Threat, Vulnerability and Impact. Determination of risk dimensions and indicators based on Octavian research, et al (2020).

Based on these three criteria, the researcher involved 10 experts or experts in the maritime field who are experienced in the three trouble spots of Indonesia to take part in the research survey through the distribution of questionnaires.

The distribution of questionnaires was carried out through Google Form to 10 experts. This questionnaire outlines the research and its objectives and includes three dimensions and 17 risk indicators by utilizing a Likert scale of 1 – 5 for assessment. The estimated time to complete the questionnaire is 10 – 15 minutes.

After taking a questionnaire, the researcher will validate the I-CVI and S-CVI data as proof that all dimensions and indicators are very important to build an assessment tool. An S–CVI score is acceptable if it has a ≥ value of 0.8 and an I-CVI has a ≥ value of 0.78 (Lakmini, et al.2023).

Table 5. Data Validity

It	Dimension	Items	Average	I-CVI	UA	Result
1	***Threat*** **(Threat)**	*Existence*	4.00	1,00	1	Accepted
		Terror Ability	3.50	1,00	1	Accepted
		Historic	4.20	1,00	1	Accepted
		Intensity	3.50	1,00	1	Accepted
		Type of Planning Activities	3.60	1,00	1	Accepted
		Target Strategies	3.20	1,00	1	Accepted
		Environmental Safety	3.60	1,00	1	Accepted
2	***Vulnerability*** **(Vulnerability)**	*Location*	3.60	1,00	1	Accepted
		Accessibility	3.60	1,00	1	Accepted
		Security Adequancy	3.80	1,00	1	Accepted
		Availability	3.40	1,00	1	Accepted
		Vulnerability	3.40	1,00	1	Accepted
3	***Impact*** **(Impact)**	*Insignificant*	3.30	1,00	1	Accepted
		Minor	3.30	1,00	1	Accepted
		Moderate	3.40	1,00	1	Accepted
		Major	3.70	1,00	1	Accepted
		Catastropic	3.80	1,00	1	Accepted
Total				16,9	16	
S-CVI/AVE				0,994		Accepted
S-CVI/UA					0,941	Accepted

Utilizing the results of the validity of this data, the AHP approach uses this data as a basic input for the creation of elements in the paired comparison matrix. Strategies for alternative approaches, as obtained from research objectives that emphasize risk factors that can be used to improve national security in three areas: Trouble spot Indonesia has the impact of BRI and FOIP in the Southeast Asia region in the North Natuna Sea, Ambalat and Papua sectors. This entails strengthening the capabilities of the Indonesian Navy and related entities to conduct national security enforcement operations to address maritime crime and focus on improving maritime infrastructure and connectivity in coastal and border areas to facilitate logistics routes (AK Susilo et al., 2019).

2. AHP Analysis

The following step involves organizing a hierarchy that includes goals, criteria and sub-criteria/strategies. This structure was developed based on risk assessment factors obtained through the results of data validity from three dimensions and 17 indicators identified through literature review in the study (Octavian et al., 2020).

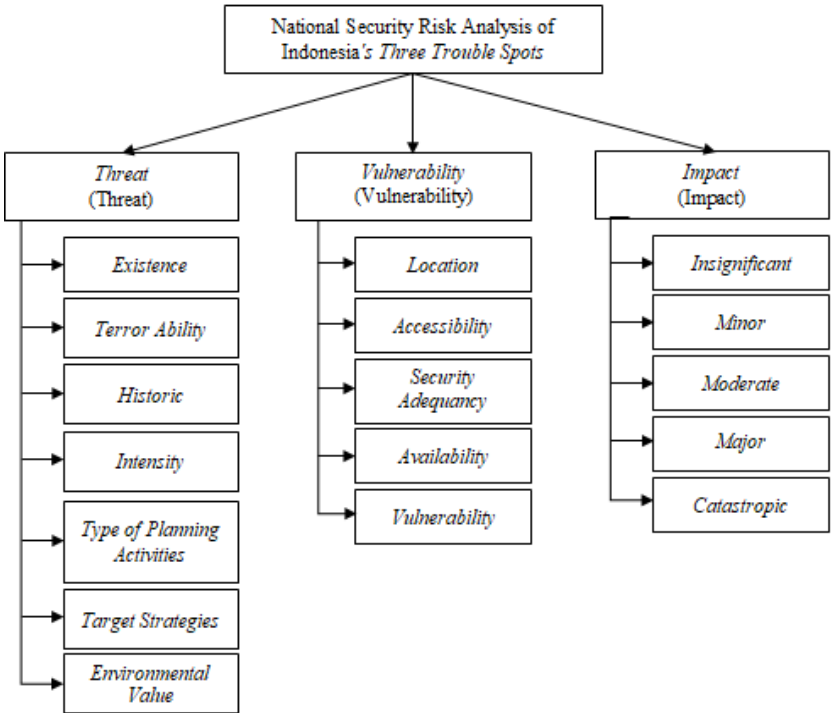

Figure 3. Risk Criteria and Sub-Criteria

Identification of risk factors or criteria is very important to conduct risk research analysis in achieving national security. For this purpose, building a hierarchical structure is an important function in identifying and building correlation relationships between these risk factors. Specifically, the threat factor includes seven sub-factors, the vulnerability factor includes five sub-factors and the impact factor includes five sub-factors.

Table 6. Hierarchy Weighting Results

Criterion	Weight Value	Ranking	Sub Criteria	Weight Value	Ranking
Threat	0.269	2	Existence	0.144	12
			Terror Ability	0.128	15
			Historic	0.167	9
			Intensity	0.108	17
			Type of Planning Activities	0.201	5
			Target Strategies	0.134	14
			Environmental Safety	0.117	16
Vulnerability	0.335	3	Location	0.273	1
			Accessibility	0.243	2
			Security Adequancy	0.165	11
			Availability	0.183	8
			Vulnerability	0.136	13
Impact	0.396	1	Insignificant	0.212	4
			Minor	0.230	3
			Moderate	0.200	6
			Major	0.191	7

Criterion	Weight Value	Ranking	Sub Criteria	Weight Value	Ranking
			Catastropic	0.167	10

After determining the significance of risk factors for a valid questionnaire, it can be seen that the consistency index (CI) value (CI) of 0.0 and the consistency ratio (CR) of 0.0 were achieved in 3 main criteria and 17 sub-criteria of assessment. The results show that the questionnaire meets the standard consistency criteria and is valid for use in this study. The relative importance of these key factors or criteria, important for the analysis of risk assessment to national security, is as shown in table 6. The results of the AHP analysis show that the importance of the impact criterion with a value of 0.396 is identified as the most important criterion in analyzing national security risks in Indonesia's three trouble spots. Then the criterion ranking is followed by vulnerability with a value of 0.335 and threat with a value of 0.269. This result can be used as one of the quantitative values in developing a national security strategy in Indonesia's three trouble spots as a result of the development of BRI (Belt and Road Initiatives) and FOIP (Free Open Indo-Pacific) with a regional focus on the North Natuna Sea, Ambalat and Papua.

Among the 17 assessment sub-criteria, it can be seen that five sub-criteria are considered the most important with a larger value, namely location with a value of 0.273, accesibility with a value of 0.243, giving rise to the dominance of the highest score which indicates the importance of geographical location and accessibility factors in dealing with security challenges in the specified trouble spots, where infrastructure expansion and activities related to BRI and FOIP are focused.

Then, a minor value of 0.230 and an insignificant value of 0.212 highlight the important role of a small but impactful element that can accumulate into a significant threat to national security.

Furthermore, the type of planning activities with a value of 0.201 is considered important because it affects the effectiveness of strategies designed to deal with complex challenges that arise.

The correlation between these sub-criteria highlights that in overcoming the challenges faced by the fleet related to BRI and FOIP, it is important to pay attention to the location, accessibility, minor and insignificant impacts along with the type of threats of planning activities carried out. This reflects the complexity of the national security challenges faced, where various aspects must be considered and analyzed to implement effective national security defense.

3. TOPSIS Analysis

After determining the weight for the risk assessment criteria, this study can be continued by conducting a TOPSIS analysis. The TOPSIS analysis was carried out to assess the risks of Indonesia's three trouble spots (North Natuna Sea, Ambalat and Papua) on risk criteria which include threats, vulnerabilities and impacts. The goal is to identify the ideal positive solution that is furthest from the negative ideal solution. Priority is given to the most suitable strategy using a 5-point likert scale to ensure all criteria reach their maximum value.

Table 7. Threat Risk Assessment

Alternative	D+	D-	Result	Rank	Level
North Natuna Sea	0,016	0,028	0,637	1	Tall
Ambalat	0,029	0,013	0,306	3	Low
Papua	0,013	0,021	0,615	2	Tall

Table 7 above shows how different regions rank in terms of security against threat risk. Among the three regions evaluated, the areas with the highest level of threat risk are the North Natuna Sea area with a value of 0.637 and the Papua region with a value of 0.615 categorized as a high threat risk level. Meanwhile, in the Ambalat area, it has a value of 0.306 with a low threat risk level.

Table 8. Vulnerability Risk Assessment

Alternative	D+	D-	Result	Rank	Level
North Natuna Sea	0,012	0,018	0,601	1	Keep
Ambalat	0,017	0,010	0,364	3	Low
Papua	0,016	0,018	0,539	2	Keep

Table 8 above shows how different regions rank in security against vulnerability risk. Among the three regions evaluated, the areas with the highest level of vulnerability risk are the North Natuna Sea region with a value of 0.601 and the Papua region with a value of 0.539 categorized as a medium vulnerability risk level. Meanwhile, the Ambalat area has a value of 0.364 with a low vulnerability risk level category.

Table 9. Impact Risk Assessment

Alternative	D+	D-	Result	Rank	Level
North Natuna Sea	0,018	0,020	0,526	1	Moderate
Ambalat	0,020	0,011	0,360	3	Moderate
Papua	0,019	0,018	0,494	2	Moderate

Table 9 above shows how different regions rank in terms of safety against impact risk. Among the three regions evaluated, the areas with the highest level of impact risk are the North Natuna Sea area with a value of 0.526 and the Papua region with a value of 0.494 categorized as a moderate impact risk level. Meanwhile, in the Ambalat area, it has a value of 0.360 with a moderate impact risk level category.

Table 10. National Security Risk Assessment

Alternative	T	V	I	Risk Score	Level	Color
North Natuna Sea	0,637	0,601	0,526	0,202	Very Low	
Ambalat	0,306	0,364	0,360	0,040	Very Low	
Papua	0,615	0,539	0,494	0,164	Very Low	

Table 10 shows the results of the overall risk assessment, where from the existence of threats, vulnerabilities and impacts that are considered high and moderate, it turns out to produce a very low level of risk. These results show inconsistencies with the background, the reason is that the perception conveyed in the background is based on general information obtained through articles and secondary data sources to find out the security conditions that occur in the three trouble spots. Then, the results of the assessment of this study are obtained directly through a quantitative approach that focuses more on probability and a more measurable impact from the perception of experts who are directly interested in the situation. So it can be said that the mitigation and response efforts that have been carried out by the Indonesian Navy reflect their effectiveness in reducing the level of national security risks in the three trouble spots studied.

The next stage after conducting a risk assessment, this study also involves determining reference values to ensure a definite level of risk

achievement. This determination depends on three main risk criteria namely; Threat, Vulnerability and Impact. Based on the multidimensional nature of the criteria, they can be created in a 3D model to show the most appropriate way to comprehensively visualize and understand the level of risk. This 3D approach facilitates a spatial representation of how each criterion interacts with each other, thus providing a clearer picture of the collective influence of each criterion on the overall assessment.

The interactions provided by each of these criteria together can provide a comprehensive picture of the risks faced so that they can be thoroughly taken into account in developing effective mitigation strategies, vulnerability reduction and preparing appropriate responses to possible threats.

The interaction of threats and vulnerabilities determines the likelihood that a threat can occur and succeed, where a high threat with high vulnerability generates a significant risk. Then the interaction of threats and impacts can determine the priority of handling with threats that have the potential to have a large impact so that they require more attention even though the probability is low. The interaction of vulnerability and impact determines how much damage or loss may occur if a threat occurs with high vulnerability accompanied by a large impact can create a very dangerous situation.

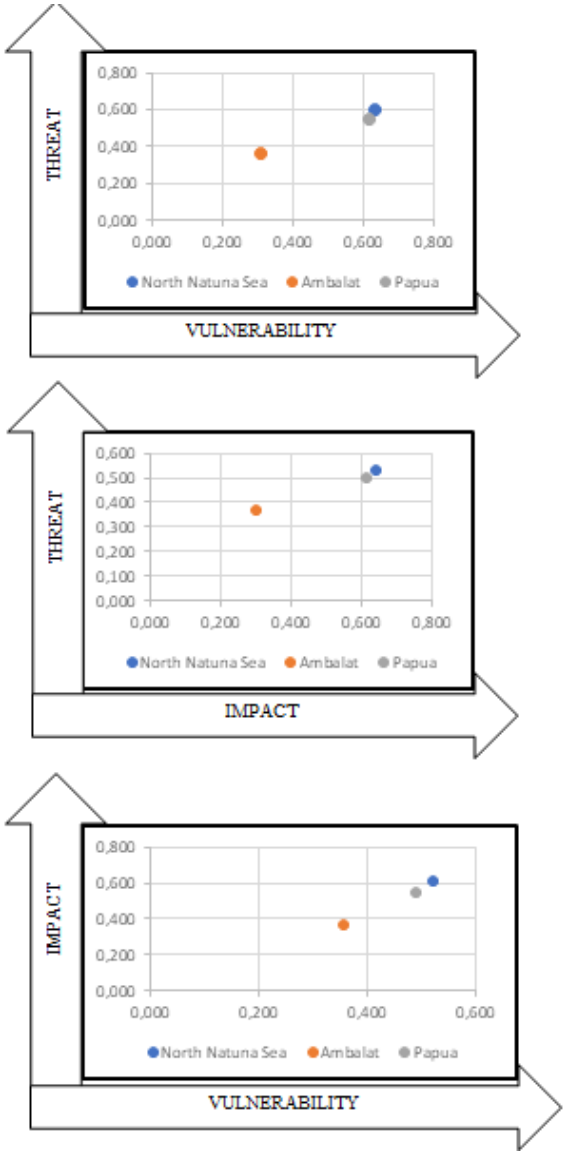

Figure 4. Results of the National Security Risk Assessment 3D Matrix

Table 10 and Figure 4 show the results of the regional risk calculation for 3 national security risks that occur in three Indonesian trouble spots , namely the North Natuna Sea, Ambalat and Papua, based on these results show that the overall level of regional risk is the same, which is very low. In particular, through these three risks, it can be known that the areas that have the highest level or risk value are the North Natuna Sea with a value of 0.202, then Papua with a value of 0.164 and Ambalat with a value of 0.040. These results show inconsistencies with the background, the reason is that the perception conveyed in the background is based on general information obtained through articles and secondary data sources to find out the security conditions that occur in the three trouble spots. Then, the results of the assessment of this study are obtained directly through a quantitative approach that focuses more on probability and a more measurable impact from the perception of experts who are directly interested in the situation. So it can be said that the mitigation and response efforts that have been carried out by the Indonesian Navy reflect their effectiveness in reducing the level of national security risks in the three trouble spots studied.

4. Sensitivity Analysis

Table 11. The Weight of the Scenario is Different on the Sub-Criteria that Affect the Threat Criterion

Threat		**Delivered**	**Scene 1**	**Scene 2**	**Scene 3**	**Scene 4**	**Scene 5**	**Scene 6**	**Scene 7**
Existence	**T1**	**0.144**	**0.144**	0.145	0.139	0.149	0.133	0.144	0.147
Terror Ability	**T2**	**0.128**	0.143	**0.128**	0.139	0.149	0.133	0.144	0.147
Historic	**T3**	**0.167**	0.143	0.145	**0.167**	0.149	0.133	0.144	0.147
Intensity	**T4**	**0.108**	0.143	0.145	0.139	**0.108**	0.133	0.144	0.147
Type of Planning Activities	**T5**	**0.201**	0.143	0.145	0.139	0.149	**0.201**	0.144	0.147
Target Strategies	**T6**	**0.134**	0.143	0.145	0.139	0.149	0.133	**0.134**	0.147
Environmental Safety	**T7**	**0.117**	0.143	0.145	0.139	0.149	0.133	0.144	**0.117**

Table 12. Relative Proximity Values to Different Scenarios on the Threat Criteria

Alternative	**Delivered**	**Scene 1**	**Scene 2**	**Scene 3**	**Scene 4**	**Scene 5**	**Scene 6**	**Scene 7**
Trouble Spot 1 (North Natuna Sea)	0.637	0.591	0.605	0.618	0.599	0.590	0.595	0.585
Trouble Spot 2 (Ambalat)	0.306	0.878	0.329	0.327	0.338	0.350	0.350	0.358
Trouble Spot 3 (Papua)	0.615	0.942	0.632	0.623	0.640	0.633	0.630	0.620

Table 11 explores the variation in the Threat dimension by changing the weight distribution across different scenarios, deviating from the initial results. This scenario experiment includes seven different scenarios. In the first scenario the weights assigned to the existance sub criteria remain unchanged, with the next six sub criteria receiving the same weights. This process is applied methodically from the second to the seventh scenario, adjusting the weights for each subsequent sub-criterion.

Then, table 12 shows the relative proximity values derived in various scenarios from table 11 which shows different values and alternative levels or regions that are likely to change depending on the weight of the assessment used. The relative value results show that the entire alternative sequence has a different change in the order of values compared to the initial value.

Table 13. The Weight of the Scenario Differs on the Sub-Criteria that Affect the Vulnerability Criterion

Vulnerability		Delivered	Scene 1	Scene 2	Scene 3	Scene 4	Scene 5
Location	V1	0.273	0.273	0.189	0.209	0.204	0.216
Accessibility	V2	0.243	0.182	0.243	0.209	0.204	0.216
Security Adequancy	V3	0.165	0.182	0.189	0.165	0.204	0.216
Availability	V4	0.183	0.182	0.189	0.209	0.183	0.216
Vulnerability	V5	0.136	0.182	0.189	0.209	0.204	0.136

Table 14. Relative Proximity Values to Different Scenarios on the Vulnerability Criteria

Alternative	**Delivered**	**Scene 1**	**Scene 2**	**Scene 3**	**Scene 4**	**Scene 5**
Trouble Spot 1 (North Natuna Sea)	0.601	0.545	0.543	0.493	0.534	0.632
Trouble Spot 2 (Ambalat)	0.364	0.376	0.420	0.390	0.421	0.421
Trouble Spot 3 (Papua)	0.539	0.564	0.520	0.580	0.529	0.470

Table 13 explores the variation in the Vulnerability dimension by changing the weight distribution across different scenarios, deviating from the initial results. This scenario experiment includes five different scenarios. In the first scenario, the weights assigned to the location sub-criteria remain unchanged, with the next four sub-criteria receiving the same weight. This process is applied methodically from the second to the fifth scenario, adjusting the weights for each subsequent sub-criterion.

Then, table 14 shows the relative proximity values derived in various scenarios from table 13 which shows different values and the level of alternatives or regions that are likely to change depending on the weight of the assessment used. The results of the relative values show that there is an alternative sequence that has a different change in the order of values compared to the initial value, which occurs in the first and third scenarios.

Table 15. The Weight of the Scenario is Different on the Sub-Criteria that Affect the Impact Criterion

Impact		Delivered	Scene 1	Scene 2	Scene 3	Scene 4	Scene 5
Insignificant	**I1**	**0.212**	**0.212**	0.193	0.200	0.202	0.208
Minor	**I2**	**0.230**	0.197	**0.230**	0.200	0.202	0.208
Moderate	**I3**	**0.200**	0.197	0.193	**0.200**	0.202	0.208
Major	**I4**	**0.191**	0.197	0.193	0.200	**0.191**	0.208
Catastropic	**I5**	**0.167**	0.197	0.193	0.200	0.202	**0.167**

Table 16. Relative Proximity Values to Different Scenarios on the Impact Criteria

Alternative	Delivered	Scene 1	Scene 2	Scene 3	Scene 4	Scene 5
Trouble Spot 1 (North Natuna Sea)	0.526	0.556	0.576	0.574	0.572	0.535
Trouble Spot 2 (Ambalat)	0.360	0.394	0.405	0.406	0.407	0.363
Trouble Spot 3 (Papua)	0.494	0.459	0.444	0.442	0.445	0.484

Table 15 explores the variation in the Impact dimension by changing the weight distribution across different scenarios, deviating from the initial results. This scenario experiment includes five different scenarios. In the first scenario the weights assigned to the insignificant sub-criteria remain unchanged, with the next four sub-criteria receiving the same weight. This process is applied methodically from the second to the fifth scenario, adjusting the weights for each subsequent sub-criterion.

Then, table 16 shows the values of relative proximity derived in various scenarios from table 15 which shows different values and the level of alternatives or regions that are likely to change depending on the weight of the assessment used. In the results of the relative value, it shows that there is no change in the alternative order that has a different change in the order of values compared to the initial value.

Figure 5. Results of 3D Sensitivity Analysis

The results of the sensitivity analysis, as depicted in Figure 5, show changes in threat, vulnerability and impact in three trouble spots.

In terms of threat sensitivity, it shows a different image pattern where trouble spot 1 (North Natuna Sea) shows high stability after scene 1, while trouble spot 2 (Ambalat) experiences a significant spike at first before stabilizing itself. Then trouble spot 3 (Papua) also experienced a significant initial surge before becoming more stable.

Then, the sensitivity of vulnerability showed a significant variation. Trouble spot 1 (North Natuna Sea) shows a noticeable improvement in scene 5, indicating a high level of sensitivity to changing conditions. On the other hand, trouble spot 2 (Ambalat) shows a stable level of vulnerability with minimal value fluctuations, indicating lower sensitivity. Meanwhile, trouble spot 3 (Papua) shows considerable fluctuations, indicating sensitivity to changes in conditions.

Furthermore, impact sensitivity shows a consistent pattern. Trouble spot 1 (North Natuna Sea), trouble spot 2 (Ambalat) and trouble spot 3 (Papua) had a stable impact, but troble spot 2 (Ambalat) showed the most stable impact among the three.

The results of the sensitivity analysis on threat, vulnerability and impact risk show that the North Natuna Sea and Papua have a higher sensitivity to changes in conditions, especially in terms of vulnerability and threats at the beginning. On the other hand, Ambalat exhibits higher stability in terms of vulnerability and impact, but is sensitive to threats. This analysis is very important as a mitigation and response to prevent and deal with threats, vulnerabilities and national security impacts in each trouble spot area.

This study offers several significant innovations and updates in the analysis of national security risks related to the Belt and Road Initiative (BRI) and Free and Open Indo-Pacific (FOIP) in Indonesia. The approach used in this study combines the Analytic Hierarchy Process (AHP) method and the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS), which in an integrated manner provides a more comprehensive and accurate risk assessment. AHP is used to assign weights to various risk criteria, while TOPSIS helps in sorting alternatives based on their proximity to the ideal solution. In addition, this study focuses on the analysis of three trouble spots in Indonesia: the North Natuna Sea, Ambalat, and Papua. This approach allows for more detailed risk identification according to the characteristics of each region, which has rarely been done in previous studies.

The risk evaluation carried out also includes various aspects such as threats, vulnerabilities, and impacts, providing a more holistic picture. This research utilizes the latest and multi-source data, improving the accuracy and relevance of the analysis results. From the results given, the criteria that have sensitive values are Threat Sensitivity and Vulnerability Sensitivity. These two criteria indicate a high level of sensitivity to change, both threats and vulnerabilities at certain points in time. Impact sensitivity indicates more impact stability without large fluctuations, so it does not show a high level of sensitivity like the previous two criteria. The use of the latest data allows for assessments that are more in line with current conditions, while multi-source data helps in validating the findings. This study provides a more in-depth context on the dynamics of power in the Indo-Pacific region and how they affect Indonesia's national security. It helps in understanding the role of geographical and political factors in shaping effective risk and mitigation strategies.

CONCLUSION

This study discusses the analysis of National Security Risks in Indonesia's Three Trouble Spots as an Impact of the Development of BRI and FOIP in the Southeast Asian Region which utilizes the Analytical Hierarchy Process (AHP) and Technique for Orfer of Preference by Similarity to Ideal Solution (TOPSIS), this method has proven to be an effective and efficient way to identify key factors and assess and analyze national security risks supported by research (Hu, 2021); (Alizadeh & Sharifi, 2021); (Putra et al., 2023) and (Octavian et al., 2020).

This study facilitates the balancing and comparison of risks that exist from various elements of national security in three Trouble spot, as well as building a database enriched with factual data and supporting the identification and comparative analysis of 17 risk sub-factors or sub-criteria raised through research (Octavian et al., 2020).

Adoption of the risk research model by (Octavian et al., 2020) This can provide important advantages of this analytical approach. When applied to the Indonesian maritime realm, this study reveals advances in the national security defense analysis model compared to other methodologies. In terms of risk factors, this study identifies three main factors or criteria, namely; Threat (Threat) (0.396), Vulnerability (Vulnerability) (0.335) and Impact (Impact) (0.269) with Location and Accesibility as the most significant sub-factor or sub-criterion in risk assessment.

From the 3D assessment and impact analysis, three alternative regions or three trouble spots are shown as indicators of very high or very low risk levels. The alternative area with the highest risk score involves improving the national security strategy with the results of the regional risk calculation for 3 national security risks that occur in three Indonesian trouble spots, namely the North Natuna Sea, Ambalat and Papua, based on these results show that the overall level of regional risk is the same, which is very low. In particular, through these three risks, it can be known that the areas that have the highest level or risk value are the North Natuna Sea with a value of 0.202, then Papua with a value of 0.164 and Ambalat with a value of 0.040.

Sensitivity analysis shows that the North Natuna Sea and Papua have a higher sensitivity to changes in conditions, especially in terms of vulnerability and threats initially. On the other hand, Ambalat exhibits higher stability in terms of vulnerability and impact, but is sensitive to threats. This analysis is important for mitigation and response to threats, vulnerabilities, and national security impacts in each trouble spot area.

This study acknowledges a number of limitations that pave the way for future research. First, research relies on the availability and quality of quantitative data, which affects the accuracy of risk analysis. Second, focus on three main problem points (North Natuna Sea, Ambalat, and Papua) ignoring potential risks in other regions related to BRI and FOIP. Third, risk analysis includes threats, vulnerabilities, and impacts, but economic, political, socio-cultural, and environmental factors are not included. Fourth, the AHP-TOPSIS method used has limitations, such as sensitivity to weight and alternative selection. Finally, suboptimal stakeholder involvement can affect the understanding of national security risks. The researcher suggests that future research expand the scope of the data, involve more respondents, compare other analysis methods, expand risk factors, and explore the impact of geopolitical strategies such as BRI and FOIP to obtain more relevant and reliable findings in understanding and addressing national security risks in Indonesia.

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