The Role of Defense Science Philosophy in Determining Strategies to Maintain The Sovereignty and Integrity of The Unitary State of The Republic Indonesia in Industrial Revolution 4.0

Junita Dewi Sari Simanjuntak, Timbul Siahaan, George Royke Deksino, Nadya Ophelia

Abstract
The complexity and dynamics of this era, the philosophy of defense science becomes a conceptual guide in formulating appropriate strategies. This research used a qualitative descriptive method. Through qualitative descriptive methods, this research analyzes the role of defense science philosophy in determining strategies to maintain the sovereignty and integrity of the Unitary State of the Republic of Indonesia. Industrial Revolution 4.0 brings the potential to increase the country’s defense capabilities, but also brings new threats, especially in terms of cyber security and paradigm changes in social and economic life. From the research that had been carried out, researchers found that the philosophy of defense science is the basis for understanding basic values, principles and concepts in determining strategies to maintain the sovereignty and integrity of the Republic of Indonesia in the era of industrial revolution 4.0 in conceptual analysis, defense ethics and ethos, threat identification, social studies and politics, as well as the development of critical thinking and innovation. Based on the role of the defense science philosophy, strategies were found to maintain the sovereignty and integrity of the Republic of Indonesia, which includes strengthening cyber security, maritime defense, developing artificial intelligence, increasing human resource capabilities, international collaboration, and increasing public awareness and education. By using this approach, the philosophy of defense science contributes significantly protecting the Republic of Indonesia from growing threats in an era of rapidly developing technology.

Keywords: Philosophy of Defense Science, Industrial Revolution 4.0, Defense Strategy, Sovereignty of The Republic of Indonesia, Integrity of The Republic of Indonesia

INTRODUCTION
The complexity and dynamics of the Industrial Revolution 4.0 era, the role of defense science philosophy is crucial in formulating appropriate strategies to maintain the sovereignty and integrity of the Unitary State of the Republic of Indonesia (NKRI). The philosophy of defense science becomes a conceptual guide for understanding the basic values, principles and concepts that support the design of defense strategies. The aim of this research is to determine the role of defense science philosophy in the context of the Republic of Indonesia's defense strategy in the Industrial Revolution 4.0 era. Technological developments have caused very fundamental changes in people's lives throughout the world, making it increasingly interesting to study throughout the world, a simple example is before and after the outbreak of the Coronavirus Disease in 2019 (Covid 19), there were major changes in the world's social and economic sectors as well as communications that are impacted by the use of digital technology. According to researchers, current events have surpassed industrial disruption 4.0 because people's lifestyle changes are very rapidly influenced by information technology and are not limited by time and space. In addition, Covid 19, which has an impact on the customs and culture of Indonesian society, has begun to directly weaken relations between communities. Pancasila as the ideology and foundation of the Indonesian state should be used as the country’s last bastion of defense in facing this problem. This technological development has the potential to increase a country's defense and defense capabilities, but it can also pose new threats. Therefore, in the
era of industrial revolution 4.0, an appropriate strategy is needed to maintain the integrity of the national sovereignty of the Unitary State of the Republic of Indonesia (NKRI). This strategy must be able to answer the challenges and threats of Indonesian society in this era. The rapid development of information technology has created new problems in many countries, including Indonesia. The condition of education in the era of industrial disruption 4.0 is now like two sides of a coin. On the other hand, productivity results and efficiency of the training process have positive values. On the other hand, the industrial revolution also has negative values, including a fast-paced world of work causing a lot of unemployment, and technology that needs to be anticipated by Indonesia. This problem is caused by globalization which causes the absence of regional, territorial and temporal boundaries. Globalization is a challenge to national and state life that tends to undermine the sense of nationality. Industrial disruption 4.0 has openly prioritized geopolitics and quickly connected it with various fields such as culture, society, economics and politics, so it is hoped that all elements of the nation will not forget to pay attention to increasing national resilience in conditions full of dynamics. Geopolitics of openness (Maharani, 2019). Apart from that, Indonesia's geographical location, which is considered advantageous compared to other countries in the world, can be used as a geostrategy to maintain national goals in conditions of industrial disruption 4.0.

According to Karsayuda and Tektona. (2021) opinion's, as a good citizen, it is important to know the history of Indonesia. In this way, the public can understand the importance of maintaining the integrity and sovereignty of the unitary state of the Republic of Indonesia. National sovereignty and the unity of the Unitary State of the Republic of Indonesia (NKRI) are two things that cannot be separated from each other. National sovereignty and integrity are important concepts in maintaining the integrity and existence of a country. State sovereignty refers to the right of a country to govern itself without interference from other countries, while national integrity refers to maintaining territorial unity and national integrity from threats and riots. In the Indonesian context, Article 1 paragraph 1 of The 1945 Constitution of The Republic of Indonesia., "State defense is all efforts to defend state sovereignty, the territorial integrity of the Unitary State of the Republic of Indonesia, and the safety of the entire nation from threats and disruptions to the integrity of the nation and state". The sovereignty of this country must be maintained for the sake of the integrity of the nation. As we know, the industrial revolution 4.0 era has brought many important changes in various areas of life, including civil services and national defense. Industrial revolution 4.0 is characterized by rapid technological developments such as artificial intelligence (AI), big data, and the Internet of Things (IoT) (Karsayuda and Tektona.2021). The aim of this research is to analyze the role of defense science philosophy in determining the defense strategy of the Republic of Indonesia in the era of the industrial revolution 4.0. In the disruption of industrial revolution 4.0 as it is now, Pancasila is the basis state and the nation's outlook on life holds an important role in being able to filter new values, so that they are able to maintain them national resilience while still paying attention Indonesia's geopolitical existence. Indonesia is a country consisting of islands, various religions, cultural traditions different, so that Pancasila as ideology must be used as a basic value in behaving and living for facing something new as it is global which is caused by progress information technology is so fast and related to digital technology based online, has a changing character fast, broad, deep, systemic, and different significantly compared to the previous situation (Sobari, 2020). In revolutionary disruption Industry 4.0 The Indonesian nation must be capable absorb and implement with Pancasila values and personality, apart from that to overcome its negative impacts, Pancasila should really be upheld by Indonesian nation as a way of life and become a basis for behaving with how to keep practicing in life.
RESEARCH METHODS

This research used a qualitative descriptive method. This method was chosen to analyze and examine the role of defense science philosophy in determining strategies to maintain the sovereignty and unity of the Republic of Indonesia during the industrial revolution 4.0. According to Sidiq and Choiri (2019), qualitative research is used to understand phenomena such as behavior, perception, motivation, behavior, and so on for research projects. Qualitative research can reveal real world problems related to the problems at hand. This qualitative research investigates ethics, religion or culture, politics, and other issues. Meanwhile, according to Creswell (2014), qualitative research is a method used to understand and explore the meaning of individuals or groups that can be thought about and emerge from social and humanitarian problems. Data collection in this research used library research methods, namely documents containing research on social values, customs and traditions. Data collection uses sources from journals, books, documents, online newspapers (internet) (Mestica Zed, 2008). The approach used in writing this paper is a conceptual and philosophical approach. Conceptual and philosophical approaches are approaches that use philosophical methods to investigate and solve problems. The philosophical approach is related to understand abstract and basic concepts as a basis for thinking or strategy, so a rational approach is needed. The philosophical approach includes conceptual understanding, guiding principles, and systems thinking as a basis for developing intervention strategies. This approach transforms concrete abstract concepts into practical strategies to protect national sovereignty and integrity, and uses defense philosophy and defense science as a framework for studying strategies to protect national sovereignty during the industrial revolution 4.0.

RESULT AND DISCUSSION

The Role of Defense Science Philosophy

The philosophy of defense science has an important role in determining strategies to maintain the sovereignty and integrity of the Republic of Indonesia in the era of Industrial Revolution 4.0. Through a philosophical approach, the philosophy of defense science provides a deep theoretical and conceptual foundation for understanding defense and security issues in the context of technology and social changes occurring in this era. The following are several important roles of defense science philosophy in determining strategies to maintain the sovereignty and integrity of the Republic of Indonesia in the era of Industrial Revolution 4.0:

a. Conceptual Analysis

The philosophy of defense science helps in conceptually analyzing defense and security issues that have emerged in the Industrial Revolution 4.0 era. This involves a deep understanding of concepts such as sovereignty, security, threats, and technology related to the defense and security of the Republic of Indonesia (Martin, 2003)

b. Defense Ethics and Ethos

The philosophy of defense science plays a role in discussing ethical and ethos aspects in the context of defense and security. This involves considering the moral values that must be maintained in the use of defense technology, fairness in the distribution of defense resources, and responsibility in strategic decision making (Sohail and Lee, 2004)
c. Threat Identification

The philosophy of defense science helps identify various threats that have emerged in the industrial revolution 4.0 era. This involves understanding traditional and new threats, such as cyber threats, energy security, climate change, and information security, as well as their impact on the sovereignty and integrity of the Republic of Indonesia (Myriam, 2007)

d. Social and Political Studies

The philosophy of defense science integrates social and political dimensions in defense strategy analysis. This involves understanding the social and political factors that influence defense policy, including the relationship between military power and political power, public participation in defense decision making, and the role of international institutions in maintaining the sovereignty and integrity of the Republic of Indonesia (Sandler and Hartley, 2007)

e. Critical Thinking and Innovation

The philosophy of defense science encourages critical thinking about existing defense strategies and policies, as well as encouraging innovation in formulating new approaches that suit the challenges of the Industrial Revolution 4.0 era. This involves the development of new concepts, analytical models, and strategic approaches that are relevant to technological change and global dynamics (Harison, 2013)

The Unitary State of the Republic of Indonesia

Indonesia has many tribes, religions and cultures. Indonesia must be seen as one unit bound by the motto Bhinneka Tunggal Ika. Even though there are many differences, they are still one. Therefore, our country is called the Unitary State of the Republic of Indonesia (NKRI). Indonesia's territory is very wide. It contains many useful natural resources. All natural potential must be utilized fairly. The goal is for every Indonesian citizen to benefit. Threats and riots also often occur in Indonesia. All Indonesian people must work together to solve this problem. One of the big dangers is the emergence of the seeds of national division. One group may feel better than another group. If the threat of national division is not overcome, the integrity of the Republic of Indonesia will be lost. The Republic of Indonesia could be destroyed. Therefore, the spirit of unity must be fostered and nurtured. One way is to understand the struggle of the founders of the Indonesian nation in advancing nationalism, winning Indonesian independence, and maintaining the sovereignty of the Republic of Indonesia. (Prastowo, 2018). The Unitary State of the Republic of Indonesia (NKRI) is a country in Southeast Asia and the largest archipelagic country in the world. The aim of building a strong defense system is to protect the sovereignty of the country, the integrity of the Republic of Indonesia, and the security of the entire nation from threats and disturbances that threaten the integrity of the nation and state. Indonesia has established a general defense system to protect the country’s sovereignty from threats and riots.

Philosophically, the concept of sovereignty and integrity of the Republic of Indonesia can be analyzed through several frameworks of thought in the philosophy of defense science, as follows:

a. Sovereignty of the Republic of Indonesia: Refers to the full power possessed by the Indonesian state to regulate and control the territory, population and resources within it. This concept of sovereignty has deep philosophical roots, which include ideas about political power, law and policy held by the state in carrying out its functions. The sovereignty of the Republic of Indonesia is also related to political decisions taken by the state to protect national interests and maintain the integrity of the state. In other words, sovereignty in defense science is defined as the state's right to determine its own policies and actions in the field of defense, and to have exclusive authority in regulating and controlling its resources, territory and...
national life (Fajar and I Ketut, 2015). Efforts to maintain state sovereignty are not only carried out by the TNI, but also citizens. Because the universal defense system involves all national resources. Citizens are one of the national resources, meaning that citizens are involved in the universal defense system. Citizen involvement in the defense system is reflected in the implementation of state defense education.

b. Integrity of the Republic of Indonesia: Refers to the unity and territorial integrity of Indonesia as a complete and undivided country. This concept of integrity includes ideas about maintaining national unity and unity, overcoming conflict and separatism, and encouraging solidarity and living together within the country. The integrity of the Republic of Indonesia is also related to respect for cultural diversity and diverse national identities. In other words, the integrity of the Republic of Indonesia is defined as the unity and completeness of Indonesia's territory as a country. This concept of integrity involves efforts to maintain and strengthen national unity, overcome various threats to regional integrity, and create conditions conducive to national development (Yoto, 2018).

Challenges of the Industrial Revolution 4.0

Technological progress creates challenges and threats for the nation because the flow of information traffic moves very quickly. So it is very possible that information will emerge that is provocative, hoax or post-truth. Industrial revolution 4.0 as a technological change will have a significant impact on human resources due to changes in the organizational environment. Developing the skills that each person has needs to be prioritized, but not only developing and improving hard skills, but also soft skills that are able to withstand all the dynamics that will develop in the future. The famous German economist, founder and CEO of the World Economic Forum (WEF) Professor Klaus Schwab explained the Industrial Revolution 4.0. Professor Shawab (2017) explains in his book "The Fourth Industrial Revolution" that the Industrial Revolution 4.0 has fundamentally changed the way society lives and works. In the case of the Industrial Revolution 4.0, this is both an opportunity and a threat to humanity. Because, if we assume that all the work required in a company can be done with a computer system or robot, then there will be fewer jobs (Budi, 2018). According to Weforum.org, there are three skills needed in the future: 1) cognitive skills, 2) soft skills, and 3) technology. We all understand that Indonesia's development will face major challenges in the technology industry in the coming years. Therefore, this shows the need for behavioral interventions that can change the socio-cultural order into revolutionary awareness and improve thinking (Basith, 2019). Currently, Indonesia is experiencing rapid development in the fields of technology, communication and information. With rapid development, opportunities and space are open for radical groups to continue carrying out terrorist acts in society with the help of technology. Basith, 2019 claims in his article that the current conditions of the digitalization 4.0 era have caused fundamental changes in the social style of all Indonesian society. In addition, changes in the Industry 4.0 era are increasing in scope, scale and complexity (Basith, 2019). The spread of fake news (disinformation) through social networks (online) seriously threatens social order and, more dangerously, religious extremism. This is a big threat to the Indonesian nation which is trying to strengthen its competitiveness in the international world. It cannot be denied that one of the keys to human resource development is the birth of ideas and imagination in the fields of environment, social, culture, religious ideology, education, politics and the economic future of the Indonesian nation. Stigmatization carried out by a company against it will not have an effect, because society in general can differentiate the information patterns presented on social media separately. In Wahyuni's article (2021), digital threats or cyber attacks are: various aspects of national and state life, including:

1. Social and cultural threats such as identity theft, copyright infringement and the spread of pornography.
2. Threats to public safety, such as cyber attacks on critical national information infrastructure.
3. Technical threats, DDoS (Distributed Denial of Service) cyber attacks, illegal access to websites, phishing, or defrauding system users, targeted attacks, and use of the dark web for illegal activities.
4. Ideological threats, spread of radicalism, terrorism and liberalism via the Internet.
5. Political threats, political provocation, fraud, SARA and anti-government attacks.
6. Financial threats, namely attacks in the financial sector and an increase in online fraud.

Strategies for Maintaining National Sovereignty and the Integrity of the Republic of Indonesia in the Era of Industrial Revolution 4.0 from a Defense Science Philosophy Perspective

The strategy to maintain national sovereignty and the integrity of the Republic of Indonesia in the industrial revolution 4.0 era requires a holistic approach involving all levels of society, both military and civilian. Here are some strategies to consider:

1. **Strengthening Cyber Security**
   In the era of Industrial Revolution 4.0, threats to the sovereignty and integrity of the Republic of Indonesia are increasingly complex, including in the cyber realm. Therefore, an effective strategy is to strengthen cybersecurity. This includes developing capacity and capabilities in protecting the country's digital infrastructure, sensitive data and communications systems from cyber attacks. (Jones, 2019)

2. **Strengthening Maritime Defense**
   The sovereignty and integrity of the Republic of Indonesia is also closely related to maritime security. In the era of Industrial Revolution 4.0, the strategy needed is to strengthen maritime defense to protect Indonesia's vast sea areas. This involves developing military capabilities, maritime cooperation with partner countries, and utilizing advanced technology in monitoring and controlling maritime areas. (Buszynski, 2019)

3. **Increasing Artificial Intelligence (AI) Capabilities**
   The Industrial Revolution 4.0 also brings great potential in the use of artificial intelligence (AI) in defense. From the perspective of defense science philosophy, the strategy that needs to be implemented is the development and use of intelligent AI in monitoring and responding to threats to the sovereignty and integrity of the Republic of Indonesia. (Negnevitsky, 2011)

4. **Increasing Human Resource Capabilities**
   In facing the Industrial Revolution 4.0, increasing human resource (HR) capabilities is also an important strategy. Qualified human resources in the fields of technology, cryptography, data analysis and other related skills are needed to maintain and secure the national defense system (Cook, 2009).

5. **Collaboration and Diplomacy**
   An effective strategy in maintaining the sovereignty and integrity of the Republic of Indonesia in the era of industrial revolution 4.0 is through international collaboration and strong diplomacy (Pramono, 2014)
7. Public Awareness and Education

With effective public awareness, the public can be given a better understanding of the importance of maintaining the sovereignty and integrity of the Republic of Indonesia in the era of Industrial Revolution 4.0. This campaign can involve various media, such as advertising, social media, public events and panel discussions to increase public awareness and active participation in maintaining state security. National security education can be an important part of the formal education curriculum. Through national security education, students can be given knowledge and understanding about the importance of the sovereignty and integrity of the Republic of Indonesia as well as the importance of maintaining security in the era of the Industrial Revolution 4.0. Relevant material, such as cyber threats, maritime defense and security technology, can be included in the educational curriculum (Wibowo, 2019)

CONCLUSION

Based on the results and analysis, this research concludes that the role of defense science philosophy in determining strategies to maintain the sovereignty and integrity of unitary state of the Republic of Indonesia. The conclusions of this research are:

1. The philosophy of defense science provides the conceptual framework and critical thinking needed to formulate the defense and security strategy of the Republic of Indonesia in the era of the Industrial Revolution 4.0. Through philosophical analysis, the philosophy of defense science helps understand the social, political and technological changes that occur in the context of the Industrial Revolution 4.0, as well as their impact on the sovereignty and integrity of the Republic of Indonesia.

2. The philosophy of defense science considers ethical and moral aspects in formulating defense and security strategies. In the Industrial Revolution 4.0 era, technological advances such as artificial intelligence (AI), internet of things (IoT), and cyber technology have the potential to be used in attacks and threats to the sovereignty and integrity of the Republic of Indonesia. The philosophy of defense science addresses the ethical implications of the use of this technology, as well as ensuring that the strategies adopted remain in line with upheld moral values.

3. The philosophy of defense science also helps identify and analyze the threats facing the Republic of Indonesia in the Industrial Revolution 4.0 era. By considering changes in geopolitical, economic and technological dynamics, the philosophy of defense science provides an in-depth framework for identifying potential threats and formulating proactive strategies in maintaining the sovereignty and integrity of the Republic of Indonesia.

4. The philosophy of defense science encourages innovation in formulating defense strategies. In the era of the Industrial Revolution 4.0, security challenges are increasingly complex and dynamic. The philosophy of defense science encourages critical thinking and innovation in formulating new approaches that are adaptive and responsive to social, political and technological change. This allows the Republic of Indonesia to remain relevant and effective in maintaining its sovereignty and integrity.
5. The role of defense science philosophy in determining strategies to maintain the sovereignty and integrity of the Republic of Indonesia in the Industrial Revolution 4.0 era is to provide a conceptual framework, consider ethical aspects, identify threats, and encourage innovation. By using this approach, the philosophy of defense science contributes significantly to protecting the Republic of Indonesia from growing threats in an era of rapidly developing technology.

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