

ANALYSIS OF THE DEVELOPMENT OF THE NATIONAL SHIPMENT INDUSTRY IN SUPPORTING INDONESIA'S DEFENSE SECURITY TO MAINTAIN WATER SOVEREIGNTY IN INDONESIA'S TERRITORY

Hendro Antoni¹ , Dewi Puspaningtyas Feani²

^{1,2}Universitas Dirgantara Marsekal Suryadarma, Jakarta, Indonesia

Email: dewi.faeni@unsurya.ac.id

INFO ARTIKEL

Riwayat Artikel:

Received :25-07-2025

Revised :10-08-2025

Accepted :18-08-2025

Keywords: Shipping Industry, Shipping Industry Development, Indonesian Defense, Indonesian Waters

DOI: <https://doi.org/10.62335>

ABSTRACT

The formulation of defense technology is influenced by the philosophy and vision of the state as stated in Law No. 3 of 2002 concerning National Defense. Indonesia's vision in national defense and security requires independence in the field of national defense and security which is influenced by geographical conditions, the condition of defense and security equipment owned, and laws and regulations. The development of defense technology must be based on demographic aspects and geographical conditions that include the articulation of the archipelagic state (in accordance with the concept of the archipelagic outlook), and an archipelagic state (in accordance with UNCLOS 1982, the United Nations Convention on Law On the Seas). How is the relationship between the shipping industry and the shipping supporting industry? How is the concept of the national shipping industry to increase competitiveness in supporting Indonesia's maritime security? The research theory and concept use the Competitiveness Theory, Empowerm

ABSTRAK

Perumusan teknologi pertahanan dipengaruhi oleh falsafah dan visi negara sebagaimana tercantum dalam Undang-Undang No. 3 Tahun 2002 tentang Pertahanan Negara. Visi Indonesia dalam pertahanan

dan keamanan negara menghendaki adanya kemandirian di bidang pertahanan dan keamanan negara yang dipengaruhi oleh kondisi geografis, kondisi alat peralatan pertahanan dan keamanan yang dimiliki, serta peraturan perundang-undangan. Pembangunan teknologi pertahanan harus berlandaskan pada aspek demografi dan kondisi geografis yang meliputi artikulasi negara kepulauan (sesuai dengan konsep wawasan nusantara), dan negara kepulauan (sesuai dengan UNCLOS 1982, United Nations Convention on Law On the Seas). Bagaimana hubungan antara industri pelayaran dengan industri penunjang pelayaran? Bagaimana konsep industri pelayaran nasional untuk meningkatkan daya saing dalam mendukung keamanan maritim Indonesia? Teori dan konsep penelitian menggunakan Teori Daya Saing, Teori Pemberdayaan, Konsep Reformasi Sektor Keamanan Maritim dan Konsep Klaster Industri Pelayaran. Metodologi penelitian kualitatif dengan metode deskriptif. Hasil Penelitian. Kerja sama antara industri pelayaran dan industri pendukung pelayaran memerlukan perubahan regulasi terkait pengelolaan industri pelayaran. Perubahan ini bertujuan untuk mengatasi permasalahan yang dihadapi pemerintah dan pelaku industri pelayaran. Dalam Undang-Undang Nomor 16 Tahun 2012 tentang Industri Pertahanan dan Peraturan Presiden. Komite Kebijakan Industri Pertahanan menekankan pemanfaatan industri nasional dalam pemenuhan Sistem Alutsista. Oleh karena itu, diperlukan pengelolaan industri pertahanan & industri pendukung lainnya. Konsep pengembangan klaster dibagi menjadi dua berdasarkan jenis kepemilikan, yaitu industri swasta dengan konsep pengelolaan klaster industri perkapalan. Sementara itu, industri BUMN menggunakan konsep holding industri galangan kapal dan industri berat nasional.

INTRODUCTION

Background of the Study

Indonesia is a unitary archipelago with diverse ethnicities and languages that have the potential to create vulnerabilities. Therefore, to overcome disruptions, both external and internal, and to build defense and security strength, an integrated national defense and security system is necessary. The rapid development of global science and technology has and will influence the national strategic environment. Until 2045, it is estimated that developed countries will continue to dominate science and technology innovation. This is primarily supported by educational systems, commercial infrastructure, research facilities and infrastructure, and substantial funding. Currently, the United States' R&D budget accounts for approximately 40% of the commercial and

public R&D budgets spent by all developed countries. R&D expenditures are expected to continue to increase year after year. With substantial funding and strong infrastructure, it is undeniable that developed countries will continue to dominate science and technology innovation. However, emerging countries such as China and India will soon follow, especially in more specific fields, such as biotechnology and information and communications technology.

The further development of certain types of technology is predicted to have the potential to revolutionize the world over the next 30 years. These technologies include information and communication technology, aerospace technology, biotechnology, propulsion and energy generation technology, intelligent materials, and nanotechnology. These technologies will have a significant impact on the advancement of global defense technology. Therefore, it is appropriate for our country to continuously pay attention to these technological advancements so that we can adopt appropriate policies to address them. Essentially, these advances can simultaneously present both opportunities and threats to the national defense system.

The Future of Indonesian Sea Power will be influenced by environmental factors, maritime strategies and foreign policies in regional and global areas that will intersect with various geostrategic, geoeconomic and geopolitical interests of Indonesia, and clash with Indonesia's national interests to strengthen military capabilities comprehensively. If Indonesia (TNI AL) does not immediately build sea power capabilities, it will result in the country's inability to guard and control Indonesian maritime waters, which will cause problems that are detrimental to Indonesia's national interests such as the threat of maritime border disputes, maritime security disturbances, violations of maritime law, and the struggle for natural and mineral resources. Therefore, to guarantee national interests in the maritime sector, a structured and systematic sea power development is needed by involving all components of the nation. Indonesia must utilize the role of the domestic maritime industry, especially the shipping industry, as an effort to improve maritime defense and security. The large number of defense equipment needs required by the TNI AL until 2045 as well as maritime law enforcement agencies and bodies, provides an opportunity for the national shipping industry to meet these needs.

Table 1. Internal and External Problems in the Shipping Industry

NO	Internal problems	External Problems
1.	Inadequate human resource quality and limited production facilities and infrastructure for building new ships and maintenance.	Lack of maintenance cooperation between user BUMNs and producing BUMNs for products such as ship procurement.
2.	Production equipment and technology are old or outdated and the quality	Lack of banking support to accelerate the development of

	requirements for raw materials for shipbuilding materials (special materials)	national shipyards to strengthen the national shipping fleet.
3.	Business law and tax incentives from the central government, for example Singapore only provides a tax of 17% for shipyards, while in Indonesia (Batam) a tax of 27% is imposed.	Lack of integration between similar industries or in the form of clusters for collaboration and mutually beneficial cooperation (win-win cooperation), especially between state-owned enterprises and the private sector in the procurement of new ships and platforms.
4.	The land status for several national shipping industries (BUMN) is still under loan from the government and BUMN has an obligation to rent it, thus burdening production costs.	Not all shipbuilding industries and related industries feel the importance of forming an industrial cluster to increase competitiveness in the shipping industry.
5.	The management of national shipping companies is not yet fully capable of competing in the global era.	Lack of government support through fiscal policies and incentives.

The capacity and capabilities of BPIS' strategic industries are expected to consistently synergize with national defense interests and provide opportunities for national industrial development and international expansion. Specifically for defense purposes, the products produced can be used directly by the Indonesian National Armed Forces (TNI), which has a comparative advantage in technology, communications, and informatics. Produced by domestic companies.

The numerous obstacles faced by the national shipping industry prove that there is something wrong with the current management of the shipping industry or the lack of government attention to developing the shipping industry as one of the main industries driving the national economy. The problems faced by the national shipping industry can be classified into two groups, namely internal problems and external problems, as can be seen in Table 1. The problems faced by the shipping industry are a dilemma faced by the government and potential ship users. The products produced, especially ships for the needs of the Indonesian Navy, are required to have sophisticated specifications of high quality in supporting maritime security operations in Indonesia, while on the other hand the national shipping industry is unprepared to meet the needs of Alutsista from the request of the Ministry of Defense.

Research Purposes

Research purposes This is to analyze the cooperative relationship between the shipping industry and the shipping support industry and to analyze the concept of the shipping industry to increase competitiveness in supporting maritime security..

RESEARCH METHODS

This research uses a qualitative approach. Creswell explains that qualitative research is a research process that analyzes human subjects or their social lives. This is done by creating a comprehensive picture, then presenting it in the words and perspectives obtained from informants, and explaining it naturally.¹⁰ This research requires data obtained from various government agencies, relevant ministries, shipping companies, and shipping support industries.

RESULTS AND DISCUSSION

Types of Defense Industry.

Some of the defense industries currently owned by Indonesia include:

a. PT. Naval Training Institute (PAL).

The level of progress of the PT. PAL shipping industry can be used as a benchmark of the progress of science and technology that has been mastered and applied by the Indonesian nation in the field of marine/shipping technology. PT. PAL is only capable to a limited extent in the field of shipbuilding, while in the field of shipbuilding maintenance it has approached the capabilities of more advanced countries. The field of propulsion and energy sources in the construction of new ships is at the assembly level, while in repairs and maintenance in order to maintain the age of the defense equipment has been generally mastered. Meanwhile, in the field of weapons, detection, identification and communication tools as well as weapons control, it is still very dependent on foreign parties. An example of production for the Indonesian Navy is the construction of the FPB 58 ship. Mastery of science and technology in the shipping sector for PT. PAL is still far from adequate in freeing itself from dependence on foreign parties.

b. PT. National Electronics Institute (LEN).

PT. LEN and the Indonesian Navy have pioneered domestic cooperation, particularly in the area of primary electrical equipment, which is currently still scarce, and in terms of maintenance to extend the service life of defense equipment. Some of these activities include:

c. PT. Dirgantara Indonesia (PT. DI).

The capabilities of PT. DI products can be used as a benchmark for the mastery of science and technology in the aerospace sector for the Indonesian nation. The Indonesian Navy/Ministry of Defense in its interests to fulfill SSAT defense equipment is highly dependent on science and technology in the aerospace sector, especially in efforts to free itself from maintenance and procurement of aircraft from

abroad. So far, the Indonesian Navy has also utilized Cassa aircraft products from PT. DI. The importance for PT. DI is an initial opportunity to try to catch up with developed countries. The level of mastery of science and technology capabilities for PT. DI can be said to be not far from the level achieved by PT. PAL where it has mastered the construction of aircraft, and is not too far behind other countries. Meanwhile, for machinery and electrical equipment and weapons systems, it has not yet fully mastered.

d. PT. Boma Bisma Indra (PT. BBI).

What stands out about PT. BBI is its products in the field of machinery, which can also be used as a benchmark for the level of mastery of science and technology in the field of machinery. Of course, the acceleration of progress achieved by PT. BBI will also depend greatly on the opportunities obtained for further achievements.

e. PT. Pindad Bandung.

It is a strategic industry that produces weapons specifically for defense purposes for the Indonesian National Armed Forces (TNI), including the Indonesian Navy (TNI AL). PT. Pindad can temporarily be used as a benchmark for the level of progress in Indonesian weaponry science and technology. In addition to producing weapons, it also pioneered the development of tanks that can be expected by the TNI AL to build future Marine strength. While its products so far have not been 100% fully developed independently, they still provide sufficient opportunities for further advancement. PT. Pindad provides considerable hope for the development of TNI weapons technology, especially the TNI AL, therefore the TNI AL must provide sufficient opportunities and support with the infrastructure it already has.

f. PT. Badak Kaltim.

Its primary product is natural gas, and it also has a maintenance unit capable of producing spare parts for TNI heavy equipment/armor, including Marines, as well as other industries. Its capabilities can be used as a benchmark for technological progress in the field of heavy equipment. The company is eager for opportunities from the Ministry of Defense/Army to advance the products produced by this strategic industry.

g. PT. Krakatau Steel Banten.

The heavy industry, which produces metal/steel raw materials for heavy industry, is quite proud. In addition to producing finished goods for domestic needs, it has also exported its products. PT. KS is a mainstay for the future and can currently be used as a benchmark for the level of progress in science and technology mastery in the steel sector. Future demands will certainly be increasingly advanced in line with the science and technology entrepreneurs and the progress of PT. Krakatau Steel.

National Shipping Industry Concept

In Indonesia, there are many shipyards, divided into two types based on ownership: privately owned shipyards managed by individuals (BUMS shipyards) and state-owned shipyards managed by the Ministry of State-Owned Enterprises (BUMN

shipyards). Therefore, in developing the national shipbuilding industry, two alternatives are needed to increase the competitiveness of the shipping industry. The private sector development uses shipping industry clusters and the state-owned enterprise sector uses industrial holdings. This is used to increase company competitiveness.

Defense Industry Independence

- a. Weapons production has become a demand for many countries around the world. This independence is not only about cost savings but also about avoiding pressure from major arms producers, who often interfere further in defense affairs. Indonesia also recognizes this demand. For the past ten years, Indonesia has been striving to meet its military weapons needs more independently, particularly for small arms for infantry and police forces. Fortunately, Indonesia has long had its own small arms industry, namely PT Pindad (Persero). This arms industry, which has existed since the Dutch colonial era (approximately 96 years old), is now increasingly playing a significant role in meeting the small arms needs of the Indonesian military (TNI/Indonesian National Army).
- b. On the other hand, experience has shown that the military's over-reliance on foreign products has had other negative consequences. This includes the frequent mismatch of weapons products used with the characteristics of troops and the natural conditions of a country. With PT. Pindad producing weapons independently, it is hoped that this will further meet the needs of the Indonesian military.
- c. Other defense industries, such as the aerospace industry, which is a key component of the air defense industry, play a crucial role in safeguarding Indonesia's airspace from threats, disruptions, obstacles, and challenges from other countries. The various positive contributions outlined above, therefore, undoubtedly warrant the preservation of the aerospace industry, whose current status is highly concerning.
- d. The defense industry in the maritime sector has so far focused solely on PT. PAL. However, there are various similar industries in Indonesia, including PT DOK and shipping, PT GALKAP KODJA, PT RUKINDO, and others. Yet, PT PAL alone has not been able to make a convincing contribution to our maritime defense needs. To date, PT. PAL has only produced four FPB-type warships, namely the KRI HIU, KRI Todak, and KRI Layang, and most recently the KRI Lemadang. The rest of PT. PAL builds merchant vessels.
- e. The conditions of these three industrial sectors—the military, aerospace, and maritime equipment—require the support of all parties, including the government, legislative bodies, the business community, research institutions, and all levels of society. The role of the government and the House of Representatives (DPR) is primarily in the regulation and policies related to the provision of low-interest loans, domestic marketing, and government-to-government relations regarding the use of Indonesian-made military equipment. Furthermore, funding and policy support for research institutions such as the BPPT (Agency for the Assessment and Application of Technology), LIPI (Indonesian Institute of Sciences), and research institutions

owned by universities are also crucial. The collaboration and research results conducted by these institutions will result in better mastery of military equipment production technology, and, equally important, mastery of raw material processing technology for the defense industry.

- f. If this relationship can be met, the gradual, continuous, and sustainable development of the defense industry towards independence can be achieved. This is further explained in the diagram below.

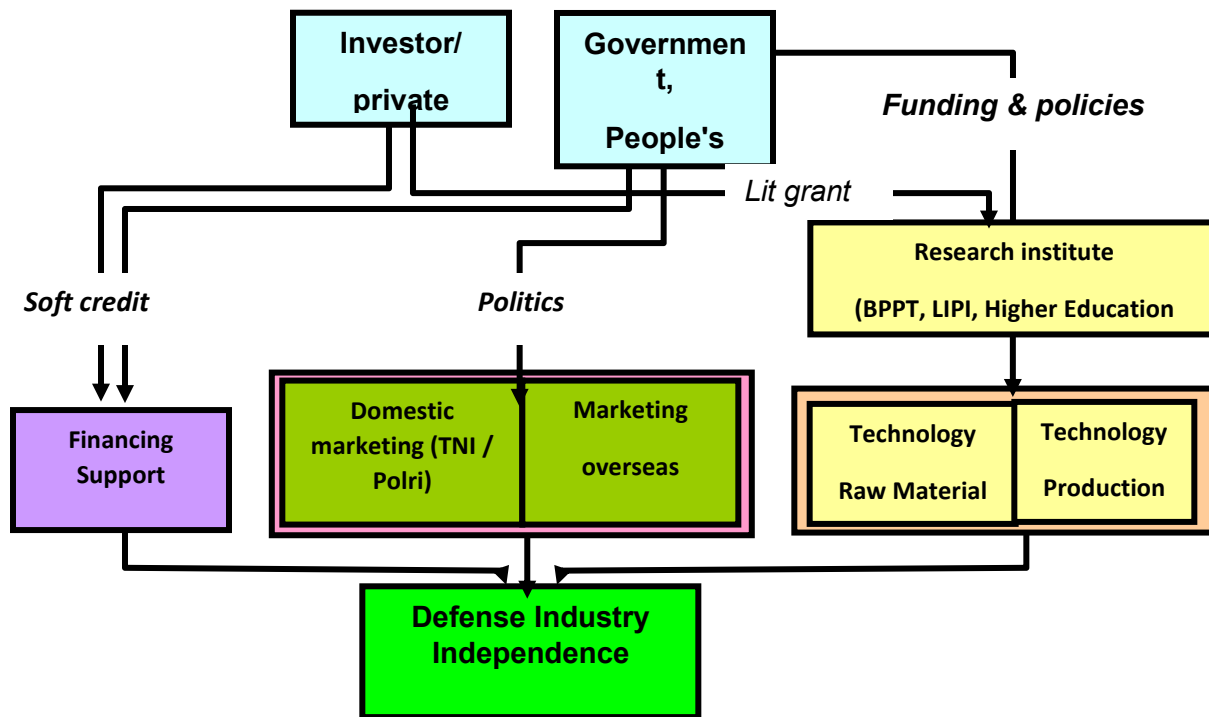


Figure 1. Chart of efforts towards independence in the defense industry.

Thus, the maritime defense force relies on a fleet of warships that function as defense equipment used to safeguard the nation's interests in territorial waters. This also ensures the Navy can play a role in defense and is able to protect the national maritime domain from threats that harm the country and from illegal actions that threaten security and safety. One effort to fulfill the MEF is to improve the capabilities of the warship fleet so that the Indonesian Navy can carry out its main duties and fulfill its mandate in accordance with the Law on the Indonesian National Armed Forces (TNI), namely to maintain the sovereignty of national defense in maritime areas. This also helps anticipate other threats that could harm the nation.

CONCLUSION

Based on the analysis of various data obtained in the implementation of the research, it is concluded that the cooperation carried out by the shipping industry and

the industry, shipping supporters require regulatory changes from the government in managing the shipping industry. Regulatory changes regarding this management are to overcome the problems faced by the government and shipping industry players, namely Internal problems are more directed at government regulatory policies in the field of shipping industry management, tax incentives, human resource quality, age of production equipment and External problems faced include commitment to integration and cooperation between state-owned and private shipyard industries, the formation of industrial clusters, coordination of service state-owned enterprises and state-owned enterprise owners in the procurement and maintenance of ships, banking support in financing new ships and fiscal policies and government incentives for imported goods. Likewise with regulations related to management in increasing TKDN in the national shipyard industry, especially for planning the generalization of ship size designs, ship components and goods needed by the shipping industry over the next few years. In Law Number 16 of 2012 concerning the Defense Industry and Presidential Regulation. Defense Industry Policy Committee, State-Owned Enterprises are mandated by the government to play a role in the independence of Defense Equipment Systems. In the regulation, it is emphasized to utilize the capabilities of the domestic industry to meet the needs of Indonesian Defense Equipment Systems. So it is necessary to manage the management between the defense industry or shipping with other supporting industries. In terms of regulations, it is very good because the government really wants to make the national defense industry independent. It is just how to manage the implementation management in the field that requires special handling so that the defense industry or shipping industry can develop according to the government's expectations.

In addition, the basic concept used by the shipping industry in supporting maritime security is by using the Triple Helix of defense industry policy stakeholders, namely the Government (Ministry of Industry, Ministry of State-Owned Enterprises and Ministry of Defense), Defense Industry (State-Owned Enterprises and Privately-Owned Enterprises), and Defense Equipment Users (TNI AL).

Based on the above conclusions, the researcher proposes theoretical and practical suggestions related to the management of the shipping industry in improving Indonesia's maritime security. As follows: First Theoretical Suggestion, Conduct more in-depth research on the development of shipping industry clusters and can analyze areas that have the potential to be used as shipping industry cluster areas. Conduct further research on the empowerment of the shipping industry using the concept of the shipping industry holding (National Shipbuilding & Heavy Industries). Conduct a study of the strategy of the shipping industry holding in order to improve the quality of the company's competitiveness. Conduct a study on the results of the Transfer of Technology and offset carried out by the Indonesian defense industry with foreign defense equipment manufacturers. Second Practical Suggestion PT. PAL Indonesia as a core industry should coordinate and cooperate with state-owned and private companies that have the competence to produce ship components and materials. The Ministry of Industry can

conduct further studies on the implementation of the development of the shipping industry using the concept of industrial clusters in areas that have potential for the shipping industry. As well as conducting a study of suitable locations for cluster development in Indonesia. The Ministry of BUMN can conduct studies and implement the formation of a shipping industry holding company (National Shipbuilding & Heavy Industries).

REFERENCES

- Arifin, MF, Director of PT. PAL Indonesia. (2016). Policy Support for Increasing Independence and Competitiveness of the National Shipping Industry. Jakarta.
- Creswell, JW (2016). Research Design: Qualitative, Quantitative, and Mixed Method Approaches. Student Library. Yogyakarta.
- Karim, Silmy., (2014) Building the Independence of the Indonesian Defense Industry. Gramedia Popular Library. Jakarta.
- Marsetio. (2014), Sea Power Indonesia. Defense University. Jakarta.
- Sunaryo, (2015). Design of an Integrated Maritime Industrial Cluster as Part of Indonesia's Concept as the World's Maritime Axis. Proceedings of SNTTM XIV.
- Faeni, D. P. (2024). Green practices and employees' performance: The mediating roles of green human resources management policies and knowledge development. *Journal of Infrastructure, Policy and Development*, 8(8), 4924. <https://doi.org/10.24294-/jipd.v8i8.4924>
- Faeni, D. P. (2024). SERVQUAL measures: Indonesian government healthcare (BPJS) from a human resource perspective. *Journal of Infrastructure, Policy and Development*, 8(2). <https://doi.org/10.24294/jipd.v8i2.2271>
- Faeni, D. P., Faeni, P. F., Basrowi., Sungkono. (2025). Green HRM for sustainable aviation: An integration evaluation using PLS-SEM and fsQCA. *Environmental Challenges*, Vol 20, 101232, ISSN 2667-0100, <https://doi.org/10.1016/j.envc.2025.101232>Hartanto,
- Faeni, D. P., Oktaviani, R. F., Riyadh, H. A., Faeni, R. P., & Beshr, B. A. H. (2025). Green Human Resource Management and Sustainable Practices on Corporate Reputation and Employee Well-being: A Model for Indonesia's F&B Industry. *Environmental Challenges*, 101082. <https://doi.org/10.1016/j.envc.2025.101082>
- Faeni, D. P., Puspitaningtyas Faeni, R., Alden Riyadh, H., & Yuliansyah, Y. (2023). The COVID-19 pandemic impact on the global tourism industry SMEs: a human capital development perspective. *Review of International Business and Strategy*, 33(2), 317–327. <https://doi.org/10.1108/RIBS-08-2021-0116>
- Faeni, D.P., Oktaviani, R.F., Riyadh, H.A., Faeni, R.P. and Beshr, B.A.H. (2025), Green Human Resource Management (GHRM) and Corporate Social Responsibility (CSR) in Reducing Carbon Emissions for Sustainable Practices. *Qual Manage.*, 34: e70048. <https://doi.org/10.1002/tqem.70048>

- Habibie, S., Gumelar, MS, & Sitorus, R. (2015). Development of Shipbuilding Industry Clusters to Increase the Competitiveness of the National Shipbuilding Industry. BPTT. Serpong-Tangerang
- Marsetio, (2013), Contemporary Maritime Security and Indonesia's Role in the Region. Presented in a Public Lecture at the Defense University, Bogor. (unpublished)
- Rosyid, DM (2013). The Role of the Maritime Industry in the Development of the National Defense System. Journal of Maritime Defense and Security, Vol. 3 No. 2. Bogor.