

## **THE EMPOWERMENT OF NATIONAL NAVAL SHIPBUILDING INDUSTRY: A SYSTEMATIC LITERATURE REVIEW OF WATER- BASED DEFENCE CAPABILITIES BETWEEN MALAYSIA AND SOUTH KOREA**

### ***PEMBERDAYAAN INDUSTRI PEMBINAAN KAPAL LAUT NEGARA: ULASAN LITERATUR SISTEMATIK MENGENAI KEUPAYAAN PERTAHANAN BERASASKAN AIR ANTARA MALAYSIA DAN KOREA SELATAN***

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#### **Abstract**

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The development of a robust naval shipbuilding industry is pivotal for national defense and economic advancement. Malaysia and South Korea, despite their differing industrial trajectories, provide valuable comparative insights into the empowerment of national naval shipbuilding capabilities. This study examines the strategies, challenges, and outcomes of naval shipbuilding in these two countries, focusing on their policy frameworks, technological advancements, and domestic industrial participation. Using a systematic literature review methodology, the research synthesizes findings from peer-reviewed journals, government reports, and industry analyses to identify patterns and divergences. The objectives are: i. To analyse the factors that are likely to prevent self-reliance in Malaysia's naval shipbuilding industry; ii. To analyse the weaknesses and challenges of Malaysia Defence Policy applied in the national naval shipbuilding industry; iii. To review South Korea's policies and analyse the strengths and weaknesses of its applied defense policy in supporting their naval shipbuilding industry.; iv. To recommend the strategies and policies enhancement to improve the National Naval Shipbuilding Industry. The findings reveal that South Korea's success lies in its comprehensive industrial ecosystem, supported by state-driven initiatives and technological investments, enabling it to become a global shipbuilding leader. In contrast, Malaysia faces significant barriers, including limited technological capacity, dependency on foreign expertise, and inconsistent policy execution, which hinder its potential growth. The study underscores the need for Malaysia to adopt a more cohesive approach, emphasizing technology transfer, workforce development, and sustained policy commitment. By identifying best practices from South Korea, this research offers policy recommendations aimed at strengthening Malaysia's naval shipbuilding industry and enhancing its strategic autonomy. The comparative analysis contributes to the broader discourse on the intersection of defense industrialization and national development.

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**Keywords:** National naval shipbuilding industry; Malaysia; South Korea; maritime defence; systematic literature review

### ***Abstrak***

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Pembangunan industri pembinaan kapal laut yang kukuh adalah penting untuk pertahanan negara dan kemajuan ekonomi. Malaysia dan Korea Selatan, walaupun mempunyai trajektori industri yang berbeza, memberikan pandangan perbandingan yang berharga mengenai pemberdayaan keupayaan pembinaan kapal laut negara. Kajian ini mengkaji strategi, cabaran, dan hasil pembinaan kapal laut di kedua-dua negara ini, dengan memberi tumpuan kepada rangka dasar mereka, kemajuan teknologi, dan penyertaan industri domestik. Menggunakan metodologi kajian literatur sistematik, penyelidikan ini mensintesis penemuan dari jurnal yang disemak oleh rakan sebaya, laporan kerajaan dan analisis industri untuk mengenal pasti corak dan perbezaan. Objektif kajian adalah: i. Untuk menganalisis faktor-faktor yang mungkin menghalang kemandirian dalam industri pembinaan kapal laut Malaysia; ii. Untuk menganalisis kelemahan dan cabaran dasar Pertahanan Malaysia yang diguna pakai dalam industri pembinaan kapal laut negara; iii. Untuk mengkaji dasar-dasar Korea Selatan dan menganalisis kekuatan dan kelemahan dasar pertahanan yang diguna pakai dalam menyokong industri pembinaan kapal laut mereka; iv. Untuk mencadangkan strategi dan penambahbaikan dasar bagi meningkatkan Industri Pembinaan Kapal Laut Negara. Penemuan kajian menunjukkan bahawa kejayaan Korea Selatan terletak pada ekosistem industri yang menyeluruh, disokong oleh inisiatif yang dipacu oleh negara dan pelaburan teknologi, membolehkan negara itu menjadi pemimpin pembinaan kapal global. Sebaliknya, Malaysia menghadapi halangan yang ketara, termasuk kapasiti teknologi yang terhad, pergantungan kepada kepakaran asing, dan pelaksanaan dasar yang tidak konsisten, yang menghalang potensi pertumbuhannya. Kajian ini menekankan keperluan untuk Malaysia mengamalkan pendekatan yang lebih bersepadu, menekankan pemindahan teknologi, pembangunan tenaga kerja, dan komitmen dasar yang berterusan. Dengan mengenal pasti amalan terbaik dari Korea Selatan, penyelidikan ini menawarkan cadangan dasar yang bertujuan untuk mengukuhkan industri pembinaan kapal laut Malaysia dan meningkatkan autonomi strategiknya. Analisis perbandingan ini menyumbang kepada wacana yang lebih luas mengenai persimpangan antara industrialisasi pertahanan dan pembangunan negara.

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***Kata kunci:*** Industri pembinaan kapal laut negara; Malaysia; Korea Selatan; pertahanan maritim; ulasan literatur sistematik

### **Introduction**

Maritime boundary disputes in the South China Sea and with other ASEAN states, for example the Sulawesi Sea with Indonesia, the Philippines' inactive claim over Sabah, and maritime boundary dispute with China over the nine-dash-line claim, are all major concerns for Malaysia. China's assertiveness, manifested in a series of encroachments, incursion, and standoffs, also presents a major challenge. A key event related to this challenge was the 2020 West Capella standoff which started when Chinese vessels harassed a drillship contracted by Petronas, Malaysia's national oil and gas company. This eventually led to Malaysian and Chinese maritime forces sailing in close proximity near Borneo. The event escalated when US and Australian naval forces arrived in the vicinity (Kwek & Hoo 2020). In 2021, the Malaysian government again protested the encroachment of Chinese vessels into Malaysian waters. The following year, 16 People's Liberation Army (PLA) jets violated Malaysian airspace leading the Royal Malaysian Air Force (RMAF) to condemn the action as a threat to national sovereignty (Ahmad et al. 2021). Presently, the encroachments of the China Coast Guard near Luconia Shoals directed at Malaysia's Kasawari gas exploration field and operations developed by Petronas, present a serious challenge to Malaysia's lucrative oil and gas industry (Syailendra 2022).

The Blue Economy is included in the 12<sup>th</sup> Malaysia Plan 2021-2025 as one of the approaches to stimulate the national economy with an emphasis on sustainable management of marine and coastal resources so that they are more productive and create a healthy marine ecosystem. To fulfill this objectives, RMN #15to5 Transformation Programme will provide Malaysia with effective maritime security which is a necessary component to enable the country to partake in the Blue Economy confidently, within a safe and secure environment. This initiative can only be achieved if this country readily equipped with capable and credible assets or platform, reliable maritime defence industries which include shipyards, sustainable and competent local vendors, and subsequently supported by other related stakeholders such as the RMN as main client, Ministry of Defence (MINDEF), and Ministry of International Trade and Industry (MITI).

Underlining the maritime strategy and Malaysia's vision to be one of the global maritime axes, the Malaysian government's approach is to apply the transfer of technology/licensed production, defence procurement, and offsets as the nation's strategic method for producing as many naval ships as possible indigenously (Balakrishnan 2019). The defence offsets procurement programs are divided into direct and indirect offsets (Ministry of Finance 2011). However, this policy concept triggers arguments between the function of offsets, whether it is a tool for enhancing and strengthening the naval defence industrial base, creating employment and developing human capital or the technology development itself.

With the current tight budget of the government, the RMN has introduced some modernization programs, enhancing naval capabilities is a major objective. Malaysia tries to consolidate its naval units of many different classes to just five new classes (RMN #15to5 Transformation Programme). It should reduce the problem of logistics (such as supply with munitions, overhaul, and spare parts) and strengthen the fleet as a whole. Moreover, the modernization of the RMN, despite a relatively small military budget, is significant.

Military strategy is rapidly changing and requires a nation to identify its own advantage and the weakness of competitors to gain competitive advantage over the long-term while also taking into account external forces such as the environment and competition, which tend to change (Augier & Marshall 2017). The military industry, such as naval shipbuilding, is a strategic industry. The Malaysian government needs to evaluate its strategy continuously by providing proper analysis of the competitive environment to create long-term competitive advantage in the naval shipbuilding industry so that it can support the RMN in enhancing maritime security of Malaysia.

While engaged in the procurement of naval ships in the short term, the government should consider the long-term strategy for the transfer of technology process and should be consistent in applying the maritime strategy for Malaysia's naval shipbuilding industry development in order to close the technology gap with other nations in the region. Therefore, the government has to evaluate the state of self-reliance of the Malaysian shipbuilding industry towards achieving the RMN Transformation Programme by studying the successes of other countries such as South Korea.

### **Malaysian Naval Shipbuilding Industry vis-a-vis the South Korean**

The credibility of the Malaysian naval shipbuilding industry has been tarnished due to several significant issues happening in the country. For instance, in 2019, Mohamad Bin Sabu (Defence Minister) made a shocking disclosure that none of the ships under the Littoral Combat Ships (LCS), or Maharaja Lela-class programme had been completed as per schedule (Archus 2019). Boustead Heavy Industries Corporation (BHIC) was awarded to develop LCS in December 2011, and the delivery was originally scheduled in 2017 (Azhar 2019). The work has been undertaken by BHIC's subsidiary, Boustead Naval Shipyard Sdn Bhd (BNS). The government stated among

the reasons caused to delays the LCS to the RMN are incompatibility work compared to the specifications, contractors' failure to complete detailed design, unsatisfactory quality of labour works, and delay in finalising the acquisition of a large portion of the equipment (Archus 2019; Azhar 2019). This failure not only affected the readiness of the RMN, but it did impact the financial condition of the nation where the cost overrun of the LCS job is estimated at RM9 billion more than the contractual amount, RM6 billion (Azhar 2019). In November 2021, Hishammuddin announced the new date for the commissioning of the first ship in 2025, six years behind schedule.

Previously, the RMN had embarked on several programmes such as the Kedah-class New Generation Patrol Vessel (NGPV) and the Samudera-class Training vessels with local yards being the preference. In both programmes, the local yards had failed to manage the projects efficiently and effectively causing delays the RMN could not afford. The Kedah-class NGPV was plagued by technical problems, quality issues, delays, and cost overruns; it even failed its pre-delivery sea trials (Hussain 2022). Even after the Malaysian government replaced the management team, the crisis still continued. Hence, the government decided to cut its losses and pulled the plug on the programme, whittling it down, from a planned 27 corvettes, to only six vessels (Hussain 2022). The Samudera-class programme in 2011 called for two training ships namely the Gagah Samudera and the Teguh Samudera to be constructed at a local yard in Sijangkang, Selangor. Due to a mismanagement of the programme, the yard was unable to complete both vessels although both had been launched in 2012 and had to fold up when a creditor (bank) took them to court in 2013 (Stach 2018). In late 2015, funds were made available only for the Gagah Samudera and a yard in Lumut was selected to complete her fitting out (Stach 2018). As of October 2016, Gagah Samudera is still undergoing her testing phase. The fate of the Teguh Samudera is still not known. Now, history seems to be repeating itself, with the LCS. The question is, isn't all this "confidence" in this shipbuilder that had already failed to deliver, twice, a little misplaced?

In November 2017, the country's first-ever naval ship contract with China has been signed between Putrajaya and the China Shipbuilding & Offshore International Co Ltd (CSOC) to purchase four vessels as part of the efforts to fulfill the RMN's 'Littoral Mission Ship' (LMS) programme (Bernama 2019). Boustead would be involved in the shipbuilding, while CSOC is the final authority in the design of the LMS. This agreement was supposed to give a new flavour and image to the RMN, as most of its past warships have been from European countries. Malaysia received its first LMS, KD Keris in 2019 (Bernama 2019). In December 2021, the RMN has taken delivery of its fourth and final Keris-class LMS, and it will be known in service as KD Rencong with pennant number 114 once it is commissioned (Rahmat 2021). Recently, it is reported that the Malaysia's Ministry of Defence is currently conducting due diligence on several Turkish shipbuilding companies before deciding which company will supply the LMS Batch 2 to the RMN (Defence Security Asia 2024). The overall value of the LMS Batch 2 ships is estimated to be over RM6 billion (Defence Security Asia 2024), which indicates a significant amount will flow out of the nation. These efforts can be questionable as to why all four LMS were being built in China and if the ships would be deployed to protect the sovereignty of Layang-Layang Island, off Sabah, could it expose a danger to Malaysian security since Chinese maritime forces sailing in close proximity near Borneo. In addition, is there any technology transfer from foreign (China and Turkey) to Malaysia and will the technology be passed on to other naval shipbuilders in Malaysia?

The role of the Malaysian government in supporting the capacity building and defence industrial growth has been highlighted by Weiss (2018) with the close coordination implementation with other economic development policies. Numerous initiatives have been embarked by the government, such as the launching of Malaysian Shipbuilding and Ship Repair Strategic Plan 2020 (SBSR 2020) as a significant means to make Malaysia as a key part in the small to medium-sized (<120m) shipbuilding markets prestigious for the quality and worth of its products and to upgrade SBSR industry's commitment to the economy and generate generous income for employees with value-added job position. In addition, the Malaysian government has established several policies and supports with regards to engaging national shipyards, but there

are as yet a few issues that cause efforts to increase the capacity and role of the shipbuilding industry have not been fulfilled. However, Malaysia still depends on outsiders and foreign original equipment manufacturers (OEMs) for the acquisition and servicing of sophisticated and high technology Naval ships equipment and systems (Yahaya 2019). This poses a dilemma for Malaysia to achieve full-fledged self-reliance in Malaysia's naval shipbuilding industry.

Despite the fact that Malaysia has fostered its naval shipbuilding industry across 30 years, the public authority and industry have a firm opinion about the absence of abilities in significant areas (Abadi 2024b). Sulaiman et al. (2020) posited that the government lacks in providing a clear strategic guidance for the industry. The accessibility of the naval vessels and military equipment has not been upheld by the capability of the domestic naval shipbuilding industry in an ideal and independent means, which has brought about reliance from foreign countries. Besides, the seriousness of various issues involving the naval shipbuilding efforts has raised public concerns about the industry ecosystem's self-reliance. Taking into consideration in the perspective of RMN #15to5 Transformation Programme, these issues have raised a question of whether the Malaysian naval shipbuilding industry's self-reliance is capable of supporting RMN Transformation Programme? Does the industry, including both shipyards and local supplier firms, have adequate capacity to help the RMN to execute its modernization efforts? Since the motivation for the naval shipbuilding industry in Malaysia is driven more by economic concerns than the strategic ones

This study argues that the Malaysian government's inconsistency in applying the defense offset policy and procurement practices became the main factor for the naval shipbuilding industry's setback in achieving self-reliance. Perhaps, the Malaysian government needs to evaluate its strategy continuously by providing proper analysis of the competitive environment to create long-term competitive advantage in the naval shipbuilding industry. South Korea has been considered by scholars like Hwang & Park (2018) and Lee (2019) as a role model for successfully increasing the capability and the self-reliance within their respective naval shipbuilding industries. Seeing at South Korea's achievements, it can be questioned what caused Malaysia, as a country with the same defense offset policy as South Korea, to have slower improvement in its naval shipbuilding industry over the 66 years since the nation gained independence? While South Korean shipbuilders have successfully built their own cutting edge submarines and underwater warfare military assets, Malaysian national shipbuilder - Boustead Naval Shipyard (known as Lumut Naval Shipyard LUNAS since 2024) - is still struggling to deliver even one Littoral Combat Ship (Abadi 2024a). Daewoo Shipbuilding & Marine Engineering DSME (now known as Hanwha Ocean) was not only successfully built four different classes of submarines (Type 214, Jang Bogo Class, Nagapasa Class, and Dosan Ahn Changho Class), but also two different class of destroyer ships (Chungmugong Yi Sun-sin-class destroyers and Gwanggaeto the Great-class destroyers), two different class of frigates (Daegu-class frigates and Ulsan-class frigates), one corvette class (Donghae-class corvettes) and one Tide-class tankers. It must be noted that Hanwha (previously Daewoo DSME) not only delivers their naval military assets to the South Korea Republic of Korean Navy (ROKN), but also exports their submarines to Indonesia namely the three units of Jang Bogo-Class submarines (Abadi 2024a; Abadi 2024b).

South Korea's naval shipbuilding industry has demonstrated significant advancements and global competitiveness through landmark achievements. On December 20, 2011, Daewoo Shipbuilding & Marine Engineering secured the largest single defense contract by a Korean firm, valued at \$1.07 billion, to construct three submarines for Indonesia. This milestone marked South Korea's debut in exporting submarines, underscoring its growing stature in the global defense market. More recently, in July 2024, Hanwha Ocean became the second South Korean shipbuilder, after Hyundai Heavy Industries, to secure a master ship repair agreement (MSRA) with the U.S. Naval Supply Systems Command (NAVSUP), granting it eligibility to participate in the U.S. Navy's maintenance, repair, and overhaul (MRO) business. Following this, on August 29, 2024, Hanwha Ocean was awarded an MRO contract for the USNS Wally Schirra, an auxiliary ship of the U.S. Navy (Hanwha Ocean, August 2024). Maintenance work for this project, spanning three months, commenced on September 2, 2024, at the Geoje Shipyard, further

solidifying South Korea's role as a key player in global naval shipbuilding and maintenance (Hanwha Ocean, September 4, 2024). Evaluating the defense offset policy approach by studying the successes of other countries such as South Korea may help Malaysia to learn from efficiency or effectiveness found in their approach to applying the defense offset policy. The enormous gap between Malaysian and South Korean naval shipbuilding industry that warrants this study is presented in the Table 1 below:

Table 1. Performance Gap between Malaysian and South Korean Shipbuilding Industry

Country	Malaysia	South Korea
<b>Submarines built</b>	0	15  Details: -Type 214 (3) -Jang Bogo class (8) -Nagapasa class (2) -Dosan Ahn Changho class(2)
<b>Destroyers built</b>	0	6  Details: -Chungmugong Yi Sun-sin-class destroyers (3) -Gwanggaeto the Great-class destroyers (3)
<b>Frigates built</b>	0 (out of 6 planned due to mismanagement)  *eventually the first Maharaja-Lela Class Frigate (known as Littoral Combat Ship LCS) entering the water in 2024	7  Details: -Daegu-class frigates (4) -Ulsan-class frigates (3)
<b>Corvettes built</b>	6 (out of 27 planned due to mismanagement)  (MEKO 100 design by German Naval Group Blohm+Voss)	1 Donghae-class corvettes

Source: Authors' compilation

This article addresses critical questions concerning the self-reliance of Malaysia's naval shipbuilding industry and its potential to bolster the nation's maritime security. Rooted in the issues highlighted within the problem statement, the study seeks to identify the key barriers to achieving self-reliance in Malaysia's naval shipbuilding sector and evaluate the adequacy of existing policies in meeting this goal. It also examines South Korea's policies and strategies as a model for fostering self-reliance in its naval shipbuilding industry. Finally, this article explores how Malaysia can adapt and implement similar strategies, including defense offset policies, to strengthen its domestic naval shipbuilding capabilities. Through these inquiries, the article aims to provide actionable insights for empowering Malaysia's naval industry to achieve greater independence and resilience.

### A Comparative Review between Malaysia and South Korean Naval Shipbuilding Industry

A Systematic Literature Review (SLR) method has been adopted to define, select and critically assess a number of previous studies (Dewey, A. & Drahota, A. 2016). The systematic literature review (SLR) approach is a rigorous and structured method for synthesizing existing knowledge, making it highly suitable for studying the comparative development of Malaysia and South Korea’s naval shipbuilding industries. This approach ensures a comprehensive and unbiased analysis by identifying, appraising, and synthesizing all relevant studies. Naval shipbuilding, being a multidisciplinary field encompassing policy analysis, industrial economics, and technological advancements, benefits from the SLR's ability to collate insights from diverse academic and industrial sources. By systematically examining past studies, government reports, and industry analyses, an SLR provides a consolidated foundation for understanding the key drivers, challenges, and outcomes of naval shipbuilding initiatives in both countries.

An SLR is particularly justified in this study because it allows for the identification of patterns and gaps in the literature that are critical for a comparative analysis. Malaysia’s naval shipbuilding sector faces challenges such as policy inconsistency and dependency on foreign expertise, while South Korea’s industry thrives on robust technological ecosystems and state-led innovations. The SLR approach enables this study to systematically contrast these experiences by categorizing findings into themes such as policy frameworks, public-private partnerships, and technological capacity. Furthermore, it facilitates the integration of theoretical perspectives, such as industrial policy theories and technology transfer models, to provide a nuanced understanding of each country's strategic approaches.

The transparency and replicability of the SLR method also make it ideal for generating policy-relevant insights. By employing predefined inclusion and exclusion criteria, the review ensures that only high-quality, relevant studies inform the analysis. This systematic approach minimizes bias and enhances the validity of findings, enabling robust recommendations for Malaysia to draw lessons from South Korea’s success. Additionally, the SLR supports evidence-based policymaking by highlighting best practices and strategic gaps, offering actionable insights to strengthen Malaysia’s naval shipbuilding sector. Thus, the SLR approach is indispensable for a thorough and comparative exploration of these two nations' naval shipbuilding industries. With this, the adoption of standard measures in collecting data such as recognition, screening, eligibility, and inclusion of studies in this systematic literature review will be used (Y. Xiao & Watson 2017).

Hence, the research topic critically focused on the Malaysian naval shipbuilding industry, which has less literature to be examined. However, this study has come up with a literature theme to find the research gap in understanding the issue. For that, the first theme is the Malaysian *shipbuilding industry* used in this SLR.

Searched question (1st step)	Q. What is the current state of the Malaysian shipbuilding industry?
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Searched question (2nd step)	<p>Q1. What is the current state of Malaysia naval shipbuilding industry?</p> <p>Q2. What is the current state of “self-reliance development” of the Malaysian naval shipbuilding industry?</p> <p>Q3. What are factors contributing to the self-reliance in the Malaysian naval ship building?</p> <p>Q4. Are there any government policies regarding the Defence Industry narrow to the self-reliance development of Malaysian naval shipbuilding?</p> <p>Q5. South Korea as a sample; Comparing their policies empowering the naval shipbuilding industry.</p>
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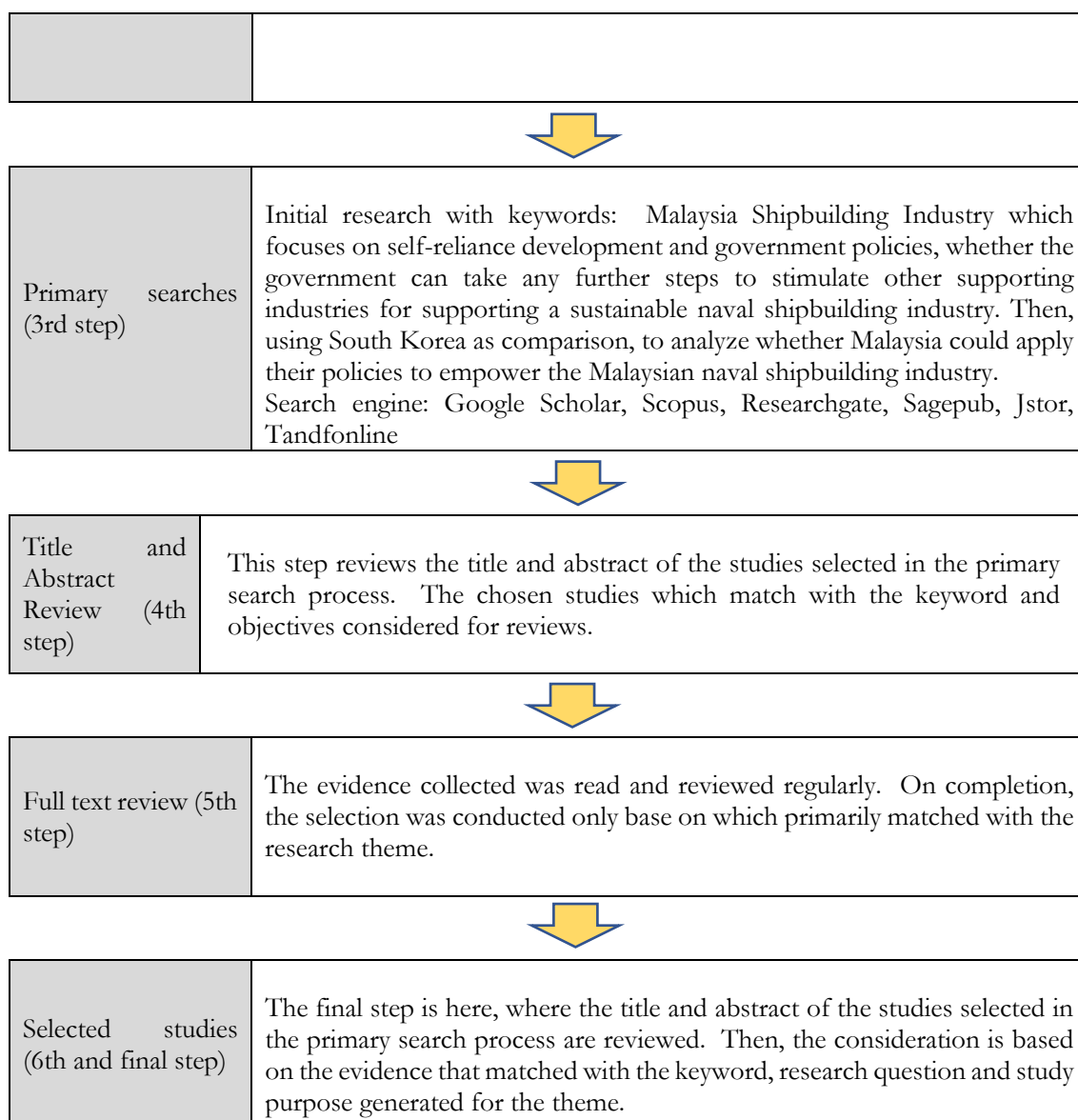


Figure 1. SLR Flow Diagram

## LITERATURE REVIEW

Based on the method described in **Figure 1**, there are several positive and good literature in books and journals. These findings and conclusions are presented in the table 2 below.

Table 2: SLR on Malaysian and South Korean Naval Shipbuilding Industry

Authors	Type	Findings
<b>Theme 1: Malaysia Naval Shipbuilding Industry</b>		
Sulaiman et al (2020)	Journal	The government lacks in providing a clear strategic guidance for the naval shipbuilding industry.
Balakrishnan, (2019)	Journal	The maritime strategy and Malaysia's vision to be one of the global maritime axes, the Malaysian government's approach is to apply the transfer of technology/licensed production, defence procurement, and offsets as the



		nation's strategic method for producing as many naval ships as possible indigenously
Lukasz Stach (2018)	Journal	Malaysia tries to develop its indigenous shipyard industry and become more independent from foreign contractors.
Jamaluddin Ab & Halim (2022)	Journal	The Malaysian shipbuilding and naval repair (SBSR) industry has evolved from the establishment of small shipyards in eastern Malaysia to the growth of larger-capacity shipyards. both in East and West Malaysia. However, consistent patterns of delays in delivering to the customer directly reduced the company's profitability and financial results.
BHIC (2020)	Brochure	Malaysian SBSR Industry is assigned as an essential industry in the Third Industrial Master Plan 2006-2020 and a promoted manufacturing activity in the 11th Malaysia Plan.
<b>Theme 2: Self-Reliance of Naval Shipbuilding Industry</b>		
Kogila Balakrishnan (2008)	Journal	The Malaysian government considered the domestic defence industry an essential element of sustainable self-reliance by ensuring the continuous supply of military assets and spares. It also pursues defence industrialization to obtain high-end sensitive military technology.
Archus (2019)	Journal	The credibility of the Malaysian naval shipbuilding industry has been tarnished due to several significant issues happening in the country. One of them, in 2019, Mohamad Bin Sabu (Defence Minister) made a shocking disclosure that none of the ships under the Littoral Combat Ships (LCS), or Maharaja Lela-class programme had been completed as per schedule.
National Defence Policy (NDP) n.d.	Policy	NDP stated self-reliance as the ability to act independently without foreign assistance to deal with internal security matters, and the ability to act independently to protect its territorial integrity and security interest from low and medium level external threats. It also covers the ability to provide logistic support for internal military operations
Roslan, Uli, Yahaya, & Nair (2018)	Journal	The government of Malaysia had made various efforts to augment affiliation between local defence industry mainly to inspire the development and modernization of the defence combat systems or platforms
Jaison (2021)	Journal	Naval shipbuilding industry's self-reliance may increase national prestige as it demonstrates industrial and technological powers and capabilities
Yahaya (2019)		Malaysia still depends on outsiders and foreign OEMs for the acquisition and servicing of sophisticated and high technology Naval ships equipment and systems
<b>Theme 3: South Korea: Comparative analysis</b>		
Hwang & Park (2018)	Journal	South Korea has high levels of technological capabilities for shipbuilding; while China, on the other hand, has a significant technology gap but has an advantage when it comes to labor costs compared to South Korea.
Lee (2019)	Journal	South Korea has the highest level of R&D capacity, and Japan has the highest level of equipment and materials technology, while China has a relatively low R&D capacity.

Dengov et al. (2021)	Journal	There is a tendency for South Korea to increase its competitiveness in the naval equipment market, because they now emerging as new exporter
Todd & Lindberg, (1996)	Book	The South Korea shipbuilding industry was included in the Group 2 in the World Naval Shipbuilding Capability Hierarchy
Setzekorn (2020)	Journal	South Korea's motivation for self-reliance in the defence industry was prompted in 1977 by the President Carter's announcement of the withdrawal of the US ground troops from South Korea, which caused concern about security and possible threats from North Korea.

Source: Authors' compilation

### Analytical Framework

Based on the comparative systematic literature review, this study focuses on four factors namely shipbuilding production capacity, transfer of technology, technology expertise, and R&D. This study assumes that if a country's industry possesses the right capacity to produce products, skills, technologies, and innovation, then it will be able to empower the whole industry. Further, this study conjectures that the success factor of South Korea's shipbuilding industry might give an impact towards the naval shipbuilding industry in Malaysia especially in terms of policy applied. Hence, the dependent variable of this study is self-reliance of the naval shipbuilding industry in Malaysia.

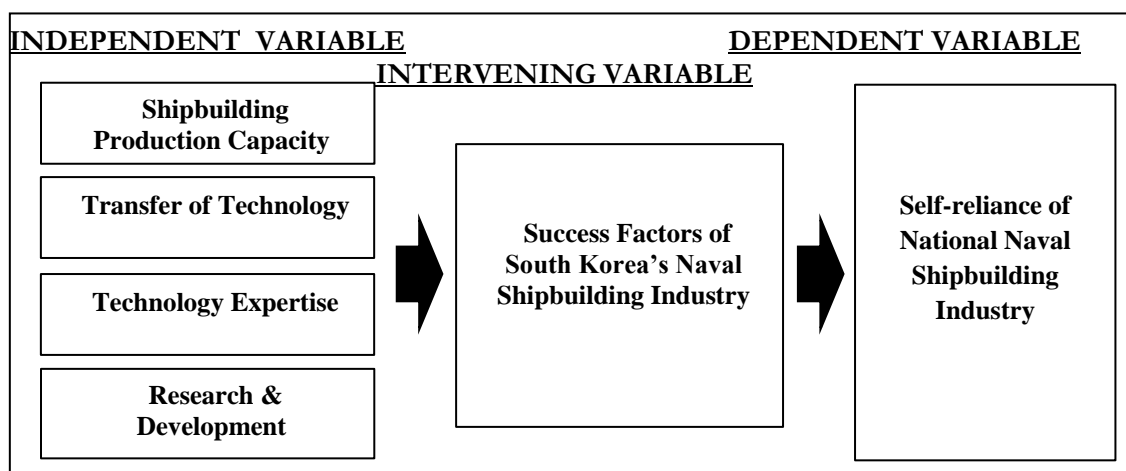


Figure 2. Conceptual Framework of the Study

### DISCUSSION

There are two issues focused in this study, namely the comparison of the current state of the national naval shipbuilding industry (NSI) with South Korea and challenges in developing self-reliance by the Malaysian NSI as the main subject of study. Hence, this study is conducted to explore the issue of the state of self-reliance of Malaysia's NSI in supporting the maritime security of Malaysia along with a comparison with South Korea. In detail, this study examines the capabilities and expertise of the local shipbuilding industry, focusing on how production capacity, technology transfer, technical expertise, and research and development (R&D) contribute to achieving self-reliance in the naval shipbuilding industry (NSI). Additionally, government policy is analyzed as an intervening variable to understand its impact on NSI's self-reliance. Using South Korea as a benchmark, the study explores how its policies have facilitated the development of its shipbuilding industry. Standardized open-ended interviews were conducted with six relevant stakeholders from the NSI sectors in Malaysia and South Korea, leading to the formulation of three key research objectives.

This study indicates that Malaysia's NSI has yet to realize its full potential and remains in a nascent stage, struggling to progress beyond basic capabilities. The Malaysian NSI is largely confined to low-end markets, with aspirations to undertake more complex shipbuilding projects. However, the industry faces significant challenges, including a lack of skilled workforce, inadequate manufacturing capabilities, and insufficient large-scale production to justify developing advanced capacities. Currently, the industry is limited to basic manufacturing, maintenance, repair, and overhaul (MRO) operations, serving a small customer base with minimal R&D and export activities. This sporadic and inconsistent growth, coupled with inadequate planning and low-tech production, undermines its ability to support the Royal Malaysian Navy (RMN) independently. The limitations of Malaysia's NSI are exemplified by the delayed Maharaja Lela Class Littoral Combat Ship (LCS) project, initiated in 2014 by Boustead Naval Shipyard (BNS) at a cost of USD 2.8 billion for six vessels. The delays, attributed to insufficient design capabilities despite collaboration with French shipyards, have disrupted the RMN's #15-to-5 fleet transformation plan. As a result, the RMN has urged the government to prioritize acquiring advanced warships. In contrast, South Korea's NSI demonstrates resilience and sophistication, supported by a robust industrial ecosystem that integrates both commercial and naval shipbuilding (Hwang & Park (2018); Dengov et al 2021). With well-established and globally recognized shipbuilding companies like Hanwha (previously Daewoo DSME), Hyundai Heavy Industries, and Samsung Heavy Industries, South Korea has achieved the capability to produce a diverse range of naval vessels and submarines locally, reflecting a significantly higher state of self-reliance compared to Malaysia. The study concludes that Malaysia and South Korea occupy vastly different positions in their pursuit of NSI self-reliance. While Malaysia's progress is hindered by limited industrial maturity, technological gaps, insufficient infrastructure, a shortage of skilled labor, weak government support, and minimal presence in international markets, South Korea's achievements are driven by its response to North Korea's threats and aspirations for regional great-power status. This strategic motivation, combined with a mature industrial base and technological expertise, has enabled South Korea to outpace Malaysia, leaving the latter with only a "satisfactory" level of self-reliance in naval shipbuilding.

Furthermore, this study finds factors influencing the current state of self-reliance in the naval shipbuilding industries (NSI) of Malaysia and South Korea. It is clear that Malaysia's "satisfactory" level of self-reliance is hindered by several challenges, including a lack of technological dynamism, unclear policy direction, limited industrial capacity, a shortage of skilled manpower, financial constraints stemming from inadequate government funding, weak government support, bureaucratic hurdles, and intense international competition (Balakrishnan 2019). In contrast, South Korea has consistently leveraged its strong technological foundation to develop and produce its own naval vessels, submarines, and fast boats. The country's arms industry has evolved in tandem with its broader economic modernization and industrialization efforts, guided by a dual strategy of "security and development" (Setzekorn 2020; Todd & Lindberg 1996). This approach integrates the advancement of heavy industry and high-tech sectors with the goal of achieving self-reliance in defense production (Lee 2019). South Korea's industrialization and technological progress have significantly contributed to its domestic naval shipbuilding capabilities by fostering general skills, technical expertise, and the necessary support infrastructure for naval production (Lee 2019). For instance, the establishment of its commercial shipbuilding industry has played a critical role in enabling the construction of advanced warships. Key factors behind South Korea's success include strategic investments, supportive government policies, robust R&D initiatives, low raw material and equipment costs, and a strong network of related industries, particularly in steel production. These elements have collectively provided a solid foundation for the growth of its NSI. Additionally, South Korea has heavily invested in education and workforce development, encouraged partnerships and collaborations with both local and international entities, and positioned itself as a global marketer for its naval ships (Hwang & Park 2018). These efforts have not only enhanced its technological capabilities but also strengthened its presence in the international market, enabling it to achieve a far higher level of self-reliance compared to Malaysia.

From a Malaysian perspective, the Malaysian government can adapt South Korea's strategies and policies to achieve self-reliance in the naval shipbuilding industry (NSI). The study highlights the necessity for Malaysia to establish a comprehensive National Defence and Security Industry Policy

(NDSIC) to support the local NSI, enabling it to evolve towards self-reliance and effectively contribute to the Royal Malaysian Navy's (RMN) transformation program. Given South Korea's success in this area, Malaysia could similarly achieve significant progress with the right measures. Key steps include enhancing the capabilities and expertise of the local NSI by increasing production capacity, facilitating technology transfer, fostering technological expertise, and prioritizing investment in research and development (R&D). The adoption of a "create and innovate" culture, integration of digital technologies, conducting Technology Needs Assessments (TNA), forming strategic alliances, and establishing government-to-government (G2G) agreements could play critical roles in advancing technology transfer for the NSI. Additionally, cultivating a technologically skilled workforce can be achieved through models like the Protégé Development Program and internship collaborations between Malaysia and South Korea. These initiatives would address the industry's talent gap and ensure a pipeline of skilled professionals to drive innovation and growth in the NSI. Furthermore, the establishment of a Science and Technology Endowment Fund to support R&D initiatives is recommended, particularly in the adoption of sustainable and green technologies within the industry. By implementing these strategies, the Malaysian government can facilitate the development of a resilient and innovative NSI, ultimately achieving greater self-reliance and bolstering Malaysia's maritime defense capabilities over the long term.

## CONCLUSION

The Malaysian naval shipbuilding industry was not robust enough to support the development of the RMN by its own industry capacity and capability. Hence, this posed a difficulty of what caused Malaysia, as a country with the same defense offset policy as South Korea, to have slower improvement in its naval shipbuilding industry over the 67 years since the nation gained independence. The success factor of South Korea's shipbuilding industry might give an impact towards the naval shipbuilding industry in Malaysia especially in terms of policy applied. This study emphasizes the critical importance of a clear and strategic industry policy in advancing Malaysia's NSI capabilities. To strengthen NSI capacity, Malaysia should prioritize science and technology development, defense industry growth, and international cooperation. The Malaysian government's Defence White Paper (DWP) could provide the necessary momentum to address the existing challenges faced by the NSI and shape its future growth. However, the DWP must go beyond superficial measures, aligning strategically with Malaysia's NSI objectives, particularly its ability to remain resilient during major power conflicts and meet national defense and security needs. This approach could elevate Malaysia's NSI to the 'second tier' of arms-producing nations, comparable to countries like Indonesia and Singapore. To achieve self-reliance in the NSI, policies must be revisited, revised, and restructured, ensuring they are clearly articulated and agreed upon by all stakeholders. Such policies should be recognized as a crucial component of national industrial power, with a unified direction starting from top leadership and cascading through all levels. Open discussions among all relevant parties are essential for achieving consensus and effective implementation. Additionally, policies like the DWP must support shipbuilding companies' survival and growth, with targeted assistance from the government to realize the vision of a self-reliant NSI. This requires active engagement and commitment from government agencies to provide the necessary resources and backing. Based on this study's analysis, significant improvements and the exploration of new opportunities in the NSI are needed. A comprehensive and cohesive policy framework, bold implementation by relevant government bodies, and capacity-building initiatives for defense industry players are critical. Such measures would lay the foundation for a more robust and self-reliant NSI, enabling it to effectively contribute to Malaysia's defense and security objectives.

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## REFERENCES

- Abadi, A.M. 2024a. Kedinamikan Kuasa Pertahanan di Asia Tenggara: Analisis Terhadap Keupayaan Kapal Selam di Malaysia, Indonesia, Vietnam dan Singapura. *Jebat: Malaysian Journal of History, Politics & Strategy* 51(2).
- Abadi A.M., 2024b. Comparing Submarine Powers in Southeast Asia: Insights From Indonesia, Malaysia, Singapore, And Vietnam. *Innovations* 961-981.
- Abd Rahman, K.P. & Rahman, F.A. 2022. *Reexamining East Malaysian Security in an Age of Growing Threats*. The Diplomat.
- Ahmad, A.R., Kuik, C.C. & Lai, Y.M. 2021. *PLA Overflight near Malaysian Airspace: A Precarious Provocation*. Fulcrum.
- Archus, D. 2019. *Malaysia's LCS Project Faced Latency Due to the Contractor's Failure*. The Naval Post
- Augier, M., & Marshall, A.W. 2017. The fog of strategy: Some organizational perspectives on strategy and the strategic management challenges in the changing competitive environment. *Comparative Strategy* 36(4): 275-292. <https://doi.org/10.1080/01495933.2017.1361196>
- Azhar, K. 2019. *Four Companies in the Running for Marine Vessel Job*. The Edge Malaysia.
- Balakrishnan, K. 2019. Defence Industrialisation in Malaysia: Development Challenges and the Revolution in Military Affairs. *Security Challenges* 4(4): 135-155.
- Bernama. 2019. *Malaysia Receives First Littoral Mission Ship from China*. Free Malaysia Today Online.
- Dengov, V., Tulyakova, I. & Gregova, E. 2021. Positions and prospects of Russian shipbuilding in the world market of naval equipment. *SHS Web of Conferences* 92: 08007. <https://doi.org/10.1051/shsconf/20219208007>.
- Hussain, H. 2022. *LCS 'Stinker' Raises Questions, Threatens to Drive Costs Beyond RM9 Billion Price Tag*. Twentytwo13 News Online.
- Hwang, I. & Park, J.H. 2018. The international competitive relationships of three leading countries in the global shipbuilding industry. *Korean Journal of Policy Studies* 33(3): 73-91.
- Jaison, M. 2021. Current trends in supply chain management of shipbuilding in India: An overview. *Industrial Engineering Journal* 14(5): 10-16.
- Jamaluddin Ab & Halim. 2022. *Malaysia Shipbuilding Industry: A Review on Sustainability and Technology Success Factors*. <https://doi.org/10.37934/araset.28.3.154164>
- Kogila Balakrishnan (008). *Defence Industrialisation in Malaysia: Development Challenges and the Revolution in Military Affairs*. Security Challenges, Summer 2008, Vol. 4, No. 4 (Summer 2008), pp. 135-155
- Kwek, I., & Hoo, C.P. 2020. *Malaysia's Rationale and Response to South China Sea Tensions*. Asia Maritime Transparency Initiative.
- Lee, K.R. 2019. Analytic comparisons of shipbuilding competitiveness between China and Korea. *Journal of Korea Trade* 23(4): 1-16.
- Lukasz Stach. 2018. *Malaysia's Maritime Security Challenges and the Development of the Royal Malaysian Navy: Old Problems and New Threats*. The Korean Journal of Defense Analysis 30(3): 423 – 436
- Rahmat, R. 2021. *Royal Malaysian Navy Receives Final Keris-class Vessel from China*. Free Malaysia Today Online.
- Roslan, N. A., Uli, J., Yahaya, M. N., & Nair, M. K. S. 2018. Malaysian Military Armoured Vehicle Procurement and its Impact on Employees' Societal Welfare (Quality of Life). *International Journal of Academic Study in Business and Social Sciences* 8(6): 1160–1169. <https://doi.org/10.6007/IJARBSS/v8i6/4310>
- Setzekorn, E. 2020. Presidential power and withdrawing from foreign entanglements: Koreanization in the 1970s. *Presidential Studies Quarterly* 50(3): 611-628.
- Stach, L. 2018. Malaysia's maritime security challenges and the development of the Royal Malaysian Navy: Old problems and new threats. *Korean Journal of Defence Analysis* 30(3): 423-436.
- Sulaiman, A., Harun, R., Salleh, M.Z., Ananthan, S., Wong, W.L., Mohaiyadin, N.M.H., & Jaid, S.D. A. 2020. An overview of the Malaysian Defence Industry and way forward. *International Journal of Academic Research in Business and Social Sciences* 10(8): 1076-1083. <https://doi.org/10.6007/ijarbss/v10-i8/7715>
- Syailendra, E.A. 2022. *China, Indonesia, and Malaysia: Waltzing Around Oil Rigs*. The Diplomat.
- Todd, D. & Lindberg, M. 1996. *Navies and Shipbuilding Industries*. Westport, CT: Praeger Publishers

Yahaya, M.N. 2019. Is Malaysia Defence Industry geared towards self-reliance capability? A conceptual analysis. *International Journal of Academic Research in Business and Social Sciences* 9(2): 963-968.

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