Vol. 7, No. 6, June 2026
E-ISSN:2723 – 6692 P-ISSN:2723– 6595
http://jiss.publikasiindonesia.id/

Maritime Logistics, Geo-Economic Integration, and Economic Rent Capture in The Malacca Strait: Implications for Indonesia's Maritime Competitiveness

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Keywords:
Malacca Strait; maritime logistics; maritime competitiveness; logistics integration; maritime industrialization

Abstract

This study examines economic rent capture and maritime competitiveness within Southeast Asian economies along the Malacca Strait, a key global trade and energy corridor. While previous research emphasizes maritime security and geopolitical rivalry, this study focuses on maritime economic integration and value distribution among littoral states. A mixed-method approach combining geopolitical economy analysis with panel data assessment was employed, covering 2010–2024. Key indicators include port throughput, logistics performance, trade integration, and maritime industrialization, compiled from UNCTAD, World Bank, IMF, ASEAN reports, and national statistics. Findings show that maritime competitiveness increasingly relies on logistics integration, institutional efficiency, digital maritime systems, and industrial ecosystem development rather than geographic location alone. Panel regression results indicate that logistics performance and maritime industrialization significantly enhance economic outcomes among Southeast Asian maritime economies. Despite Indonesia's geographic advantage within the Strait, its economic value capture remains constrained by fragmented logistics, limited integration of maritime services, and uneven industrial coordination. This study contributes to the literature by integrating maritime geopolitics, logistics governance, and geo-economic perspectives in a unified framework. It proposes a strategic policy framework emphasizing maritime industrialization, smart-port integration, logistics sovereignty, and ecosystem-based maritime development to enhance Indonesia's competitiveness within the evolving Indo-Pacific economy.

INTRODUCTION

The Malacca Strait represents one of the most critical maritime corridors in the contemporary global economy. Positioned between the Indian Ocean and the South China Sea, the Strait functions as a primary transportation route connecting East Asia, the Middle East, Europe, and emerging Indo-Pacific production networks. According to Vinokurov & Tsukarev (2018), recent maritime transport reports, approximately one-third of global trade and a substantial proportion of East Asian energy imports transit through this corridor annually. The strategic importance of the Strait has therefore expanded beyond traditional shipping activities

into broader dimensions of global supply-chain resilience, energy security, and geopolitical stability (Koray et al., 2025; Li et al., 2026; Takeda et al., 2024; Zhao & Zhao, 2025).

The increasing importance of the Malacca Strait is closely associated with structural transformations in the global economy over the last three decades. The rapid industrialization of China, the expansion of intra-Asian trade, and the intensification of maritime-based global production systems have collectively elevated the Indo-Pacific into a central axis of world economic activity. Simultaneously, globalization has increased dependence on highly interconnected logistics systems in which maritime transportation serves as the backbone of international commerce (Jafarpour Ghalehteimouri et al., 2025). Within this context, strategic maritime corridors such as the Malacca Strait no longer function merely as passive transit routes; instead, they increasingly operate as integrated economic ecosystems generating substantial financial and industrial value (Khalid et al., 2025; Kury, 2022; Ventura Jariod, 2019; Zulkifli et al., 2020).

In addition to its economic significance, the Strait occupies an increasingly important position within contemporary geopolitical competition. Rivalry between the United States and China has intensified strategic attention toward Indo-Pacific maritime routes, particularly those associated with energy transportation and global logistics connectivity (He & Li, 2020; Nguyen et al., 2024). China's heavy dependence on imported hydrocarbons passing through the Malacca Strait has generated what is commonly referred to as the "Malacca Dilemma," highlighting concerns regarding maritime vulnerability and supply-chain disruption. At the same time, the United States continues to prioritize maritime stability and freedom of navigation as essential components of its Indo-Pacific strategy (Grant et al., 2023; Niazi, 2024; Scott, 2018). Consequently, the Strait has become simultaneously an economic corridor, a geopolitical chokepoint, and a strategic infrastructure system.

Despite its extraordinary strategic relevance, an important paradox remains insufficiently examined within existing scholarship. Indonesia possesses substantial geographic proximity to the Strait and occupies a critical position within Southeast Asian maritime networks (Idris & Ramli, 2018; Pattiradjawane & Soebagjo, 2015; Wicaksana, 2017). Nevertheless, Indonesia has not emerged as the dominant economic beneficiary of the vast maritime flows passing through the region (Rochwulaningsih et al., 2019; Wicaksana, 2017). Instead, Singapore has consolidated its position as one of the world's leading maritime logistics and service hubs, capturing disproportionate economic value through port integration, maritime finance, bunkering services, marine insurance, refinery ecosystems, and digital logistics coordination.

This asymmetry raises a broader analytical question concerning the relationship between geography and economic power. Classical geopolitical perspectives frequently assume that strategic geographic positioning provides states with inherent economic and political advantages. However, developments in the Malacca Strait suggest that territorial proximity alone may not guarantee economic rent capture in contemporary maritime capitalism (Faisal, n.d.). Instead, value increasingly appears to be concentrated within economies capable of integrating logistics systems, financial services, industrial ecosystems, and digital infrastructure into coherent maritime governance structures.

Most existing studies concerning the Malacca Strait focus primarily on maritime security, naval strategy, piracy, or regional geopolitical competition. While these studies provide important insights into strategic stability and maritime governance, they often underemphasize

the political economy dimension of maritime value creation. In particular, relatively limited attention has been devoted to understanding how economic rents generated within strategic maritime corridors are distributed asymmetrically among littoral states and regional actors.

This study argues that the Malacca Strait should not only be understood as a maritime chokepoint, but also as a geo-economic rent-generation system. In the contemporary global economy, maritime corridors generate economic value through a wide range of interconnected activities including logistics coordination, shipping finance, marine insurance, fuel bunkering, industrial processing, digital trade systems, and supply-chain management. Consequently, states possessing advanced maritime ecosystems may capture substantially greater economic rents than geographically larger states with weaker institutional and logistics integration.

To explain this phenomenon, this paper introduces two conceptual approaches. The first is the concept of the Geo-Economic Rent Corridor, referring to a strategic maritime space where economic value is generated primarily through the coordination and servicing of international trade flows rather than through domestic production alone. The second is the concept of Geo-Economic Leakage, which describes a structural condition in which strategically positioned states fail to internalize economic value generated within their own maritime environments.

Using Indonesia as the principal case study, this research examines how maritime economic rents within the Malacca Strait system are distributed and why Indonesia continues to experience relatively limited maritime value capture despite its strategic geographic advantages. The study further investigates how maritime ecosystem integration, logistics competitiveness, and industrial clustering influence economic performance within selected Southeast Asian maritime economies.

The novelty of this research lies in several key contributions. First, this study introduces two analytical concepts: the Geo-Economic Rent Corridor, referring to a strategic maritime space where economic value is generated primarily through the coordination and servicing of international trade flows rather than through domestic production alone; and Geo-Economic Leakage, describing a structural condition in which strategically positioned states fail to internalize economic value generated within their own maritime environments. Second, this research integrates maritime geopolitics, logistics governance, and geo-economic perspectives into a unified analytical framework, extending conventional maritime chokepoint studies. Third, the study employs panel data regression across five Southeast Asian maritime economies (Indonesia, Singapore, Malaysia, Thailand, and Vietnam) over the 2010-2024 period, providing empirical evidence on the relative importance of logistics performance, maritime industrialization, port throughput, and trade integration for economic outcomes. Fourth, this paper proposes a strategic policy framework emphasizing maritime industrialization, logistics sovereignty, smart-port integration, and ecosystem-based development specifically tailored to Indonesia's structural constraints.

This paper contributes to the existing literature in several ways. First, it expands conventional maritime chokepoint studies by incorporating geo-economic and logistics-capitalism perspectives into the analysis of strategic maritime corridors. Second, it develops the concept of geo-economic leakage as an analytical framework for understanding asymmetrical maritime value distribution. Third, the paper proposes a strategic transformation framework emphasizing maritime industrialization, logistics sovereignty, institutional modernization, and smart-port integration as mechanisms for enhancing Indonesia’s maritime competitiveness.

Methodologically, the study employs a mixed-method geopolitical economy approach combining qualitative strategic analysis with comparative quantitative indicators related to port throughput, logistics performance, maritime industrialization, and trade integration. Data are drawn from international institutions including UNCTAD, the World Bank, the International Energy Agency, ASEAN maritime reports, and national transportation statistics.

The remainder of this paper is organized into five sections. Section 2 reviews relevant literature concerning maritime geopolitics, geo-economics, and logistics capitalism. Section 3 presents the theoretical framework and research methodology. Section 4 discusses empirical findings and comparative maritime indicators among selected Southeast Asian economies. Section 5 evaluates strategic implications for Indonesia within the evolving Indo-Pacific economic order. The final section concludes the paper and identifies directions for future research.

METHOD

Research Design

This study employed a mixed-method geopolitical economy approach combining qualitative strategic analysis with quantitative empirical examination. The research is designed to analyze how maritime ecosystem integration influences economic performance and maritime value capture within the Malacca Strait system.

The qualitative component focuses on maritime geopolitics, logistics governance, strategic infrastructure and regional geo-economic transformation.

Meanwhile, the quantitative component evaluates the relationship between maritime economic indicators and macroeconomic performance among selected Southeast Asian maritime economies.

This combination is intended to provide a more comprehensive understanding of how strategic maritime corridors generate economic rents and why such rents are distributed asymmetrically across states with differing institutional and logistics capacities.

Research Scope and Data

The study focuses on five Southeast Asian maritime economies Indonesia, Singapore, Malaysia, Thailand, and Vietnam.

These countries were selected due to their varying levels of maritime integration, logistics competitiveness, and economic dependence on Indo-Pacific trade flows.

The study utilizes panel data covering the period 2010–2024. Data are compiled from UNCTAD, World Bank, IMF, International Energy Agency, ASEAN Secretariat and national maritime and transportation agencies.

Research Variables

The empirical analysis employs several macroeconomic and maritime-related indicators to evaluate the relationship between maritime ecosystem development and economic performance.

Table 1 Dependent Variable

Variable	Description	Source
GDP	Annual GDP Growth (%)	World Bank

Table 2 Independent Variables

Variable	Description	Proxy Indicator	Source
PORT	Maritime throughput capacity	Port throughput (TEUs)	UNCTAD
LOG	Logistics competitiveness	Logistics Performance Index	World Bank
TRADE	Trade integration	Trade-to-GDP ratio	IMF
MAR	Maritime industrialization	Maritime industrial output index	National statistics

Research Hypotheses

Based on the theoretical framework and previous literature, this study proposes the following hypotheses:

H1 Port throughput positively influences economic growth among Southeast Asian maritime economies.

H2 Logistics performance significantly enhances maritime economic competitiveness.

H3 Higher trade integration contributes positively to maritime-related economic expansion.

H4 Maritime industrialization increases national capacity to capture maritime economic rents.

These hypotheses are constructed to evaluate whether maritime ecosystem integration contributes significantly to macroeconomic performance and strategic value capture.

Econometric Model

To examine the relationship between maritime strategic variables and economic performance, this study applies a panel-data regression model.

The econometric specification is formulated as follows:

$$GDP_{it} = \alpha + \beta 1\ PORT_{it} + \beta 2\ LOG_{it} + \beta 3\ TRADE_{it} + \beta 4\ MAR_{it} + \varepsilon_{it}$$

Where:

Table 3 Econometric Model

Symbol	**Definition**
GDP	Annual economic growth
PORT	Port throughput volume
LOG	Logistics performance index
TRADE	Trade openness ratio
MAR	Maritime industrialization index
i	Country index
t	Time period
ε	Error term

The model evaluates how maritime ecosystem variables influence economic performance across selected Southeast Asian maritime economies over time.

The fixed-effects model was selected based on the Hausman specification test.

Estimation Technique

The study applies panel-data estimation techniques consisting of pooled ordinary least squares (POLS), fixed effects model (FEM) and random effects model (REM).

To determine the most appropriate estimation model, the study employs Chow test, Hausman test and Breusch–Pagan Lagrange Multiplier test.

The use of panel-data analysis is appropriate because it allows the research to capture cross-country differences, temporal dynamics and structural variations among maritime economies.

Descriptive Statistics

Table 4 presents the descriptive statistics of the principal variables used in the empirical analysis.

Table 4. Descriptive Statistics (2010–2024)

Variable	Mean	Maximum	Minimum	Std. Dev.
GDP Growth (%)	4.87	8.91	-5.60	2.14
Port Throughput (Million TEUs)	21.45	39.01	5.20	11.63
Logistics Performance Index	3.41	4.30	2.50	0.54
Trade-to-GDP Ratio (%)	124.20	311.40	35.70	79.80
Maritime Industrialization Index	62.10	92.40	38.20	15.70

The descriptive statistics indicate substantial variation among Southeast Asian maritime economies. Singapore demonstrates exceptionally high trade integration and logistics performance, while Indonesia exhibits comparatively lower logistics competitiveness despite its larger territorial and demographic scale.

The wide variation in port throughput and logistics indicators suggests that maritime ecosystem integration differs considerably across countries within the region. This supports the study's argument that strategic geographic positioning alone does not automatically produce equivalent levels of maritime economic competitiveness.

Analytical Framework

This study interprets the Malacca Strait as a geo-economic rent corridor in which maritime economic value is generated through interconnected logistics and industrial ecosystems.

The analytical framework assumes that strategic maritime flows generate economic rents, while ecosystem integration and institutional efficiency determine the capacity of states to capture those rents. Asymmetrical ecosystem development may consequently produce geo-economic leakage.

Under this framework, states possessing advanced maritime ecosystems are expected to capture disproportionately larger economic benefits from identical maritime flows compared to states with weaker logistics integration and institutional coordination.

RESULTS AND DISCUSSIONS

Descriptive Analysis of Maritime Economic Performance

The empirical findings indicate substantial asymmetries in maritime economic performance among Southeast Asian littoral economies surrounding the Malacca Strait. Although several countries within the region possess direct geographic proximity to the Strait, the ability to capture maritime economic rents differs significantly depending on logistics integration, institutional efficiency, and industrial ecosystem maturity.

The descriptive statistics reveal that Singapore consistently demonstrates the highest levels of port throughput, logistics competitiveness, trade integration and maritime ecosystem sophistication.

Singapore's average port throughput exceeds 39 million TEUs annually during the latter observation period, significantly outperforming regional counterparts despite its relatively small territorial size. In contrast, Indonesia records considerably lower logistics integration and maritime service competitiveness despite possessing broader territorial access to regional maritime corridors.

This divergence supports the argument that maritime economic competitiveness is increasingly determined by ecosystem integration rather than geographic scale alone.

In addition, descriptive findings indicate that countries possessing advanced logistics systems generally exhibit lower logistics costs, stronger export competitiveness, higher maritime service diversification and greater integration into global supply chains.

These findings align with recent studies emphasizing the growing importance of logistics capitalism within the global economy.

Maritime Logistics and Geo-Economic Rent Capture

The findings further demonstrate that maritime economic rents within the Malacca Strait system are distributed asymmetrically across the region.

A substantial proportion of high-value maritime activities remains concentrated in Singapore, particularly maritime finance, marine insurance, bunkering, digital trade coordination, legal arbitration and logistics management.

By contrast, Indonesia's maritime participation remains concentrated primarily in lower-value transit functions and commodity-related activities.

This asymmetry reflects what this study conceptualizes as Geo-Economic Leakage, namely the structural inability of geographically strategic states to internalize economic value generated within their own strategic maritime environments.

The evidence suggests that strategic maritime value creation increasingly depends on institutional coordination, logistics efficiency, digital maritime systems, industrial clustering, and ecosystem integration.

Consequently, states possessing advanced maritime ecosystems are capable of extracting disproportionately higher economic rents from identical shipping flows.

This finding extends conventional maritime geopolitics literature by demonstrating that economic power within strategic maritime corridors depends not solely on territorial control, but also on the ability to organize and govern integrated maritime systems.

Panel Regression Results

To evaluate the relationship between maritime ecosystem variables and economic performance, this study applies panel-data regression analysis using selected Southeast Asian maritime economies over the period 2010–2024.

The empirical estimation employs fixed-effects and random-effects approaches. Based on the Hausman specification test, the fixed-effects model was selected as the preferred estimation method due to its consistency and explanatory suitability.

Table 5. Panel Regression Results

Variable	Coefficient	t-Statistic	Probability
PORT	0.417	3.284	0.002
LOG	0.538	4.117	0.000
TRADE	0.291	2.236	0.031
MAR	0.364	2.874	0.006
Constant	1.482	1.907	0.061

Table 6

Model Statistics	Value
R^2	0.71
Adjusted R^2	0.68
F-statistic	19.84
Prob (F-statistic)	0.000

The regression results indicate that all principal explanatory variables positively and significantly influence economic performance among maritime economies within the region.

The coefficient for port throughput (PORT) demonstrates that increasing maritime cargo capacity contributes positively to economic growth and maritime-related economic activity. This finding supports the argument that port integration remains an important determinant of maritime competitiveness.

Logistics performance (LOG) produces the strongest coefficient among the explanatory variables, indicating that logistics efficiency plays a particularly important role in shaping economic outcomes. Countries possessing advanced logistics systems appear substantially more capable of converting maritime connectivity into broader economic value.

Trade integration (TRADE) also demonstrates a statistically significant positive relationship with economic performance. This finding suggests that greater participation in international trade networks enhances maritime economic spillover effects.

Similarly, maritime industrialization (MAR) positively affects economic growth, indicating that industrial ecosystem integration strengthens the capacity of states to internalize maritime economic rents.

Overall, the regression findings strongly support the study's central proposition that maritime ecosystem integration exerts a greater influence on economic competitiveness than geographic proximity alone.

Discussion of Hypotheses

The empirical results provide support for all proposed hypotheses.

H1 Port throughput positively influences economic growth.

The regression findings indicate that increased maritime throughput contributes significantly to economic performance through trade expansion, logistics activity, and industrial connectivity.

H2 Logistics performance significantly enhances maritime competitiveness.

This hypothesis receives the strongest empirical support. Logistics efficiency appears to be the most influential variable affecting maritime economic performance among the observed economies.

H3 Trade integration positively affects maritime-related economic expansion.

The results suggest that economies more deeply integrated into global trade systems experience stronger maritime spillover effects and broader economic benefits.

H4 Maritime industrialization increases national rent capture capacity.

The findings demonstrate that industrial ecosystem integration enhances the ability of states to internalize economic value generated through strategic maritime corridors.

Collectively, these findings strengthen the argument that contemporary maritime competition increasingly revolves around ecosystemic integration rather than physical geography alone.

Indonesia and the Passive Transit Economy

The empirical analysis suggests that Indonesia continues to experience structural limitations in capturing maritime economic rents despite occupying one of the world's most strategic maritime positions.

Several interconnected factors contribute to this condition, including fragmented logistics systems, uneven infrastructure quality, relatively high logistics costs, limited maritime financial integration, and underdeveloped maritime industrial ecosystems.

These structural constraints reduce Indonesia's ability to convert strategic geographic positioning into high-value maritime economic activity.

As a consequence, Indonesia frequently functions as a transit geography rather than a dominant maritime value creator. High-density maritime flows pass through the surrounding region, yet substantial portions of associated economic rents continue to be externalized toward more integrated maritime economies.

This finding supports the study's concept of Geo-Economic Leakage.

The Emerging Competition for Maritime Ecosystems

The findings also suggest that future strategic competition within the Indo-Pacific will increasingly involve control over maritime ecosystems rather than conventional territorial domination alone.

Maritime competitiveness is becoming increasingly associated with smart-port integration, digital logistics systems, maritime finance, energy processing, supply-chain coordination and industrial clustering.

This transformation reflects broader structural shifts within global capitalism in which logistics systems operate as strategic economic infrastructure.

Countries capable of integrating maritime transportation with advanced industrial and digital ecosystems are likely to capture substantially larger economic rents from global trade flows.

Within this context, the Malacca Strait should be understood not only as a maritime chokepoint, but as a geo-economic platform where economic power is increasingly shaped through logistics governance and ecosystem integration.

Strategic Implications for Indonesia

The findings generate several important strategic implications for Indonesia

First, maritime development policy should move beyond traditional infrastructure expansion toward integrated ecosystem development. Port construction alone is insufficient without complementary logistics systems, industrial clustering, and digital integration.

Second, Indonesia requires stronger maritime industrialization strategies emphasizing refinery integration, shipbuilding, petrochemical industries, and maritime technology sectors.

Third, reducing domestic logistics costs should become a strategic national priority because logistics competitiveness strongly influences maritime economic rent capture.

Fourth, Indonesia must strengthen institutional coordination and regulatory efficiency within maritime governance systems.

Finally, Indonesia possesses significant opportunities to position itself as a strategic logistics and industrial hub within evolving Indo-Pacific supply-chain restructuring. However, achieving this objective requires long-term institutional modernization and ecosystem integration rather than reliance on geographic advantage alone.

Strategic Implications and Policy Framework

Reinterpreting Maritime Power in the Indo-Pacific

The findings of this study suggest that the nature of maritime power within the Indo-Pacific region is undergoing significant transformation. Conventional geopolitical perspectives frequently emphasize naval capability, territorial positioning, and maritime security as the principal determinants of strategic influence. However, the empirical results indicate that contemporary maritime competitiveness increasingly depends on the ability of states to organize integrated logistics ecosystems capable of capturing economic rents from global trade flows.

Within the Malacca Strait system, economic value is no longer generated solely through physical transportation activities. Instead, value creation increasingly occurs through logistics coordination, maritime finance, marine insurance, digital port systems, energy processing and industrial clustering.

As a result, maritime power should be interpreted not merely in territorial or military terms, but also through institutional and ecosystemic capacity.

This transformation reflects broader structural changes within the global political economy. The expansion of supply-chain capitalism, the digitalization of logistics systems, and the increasing integration of maritime infrastructure into global production networks have collectively elevated logistics governance into a strategic source of economic power.

Consequently, states capable of integrating maritime transportation systems with industrial and financial ecosystems are likely to exercise disproportionate influence within future Indo-Pacific economic structures.

Indonesia's Strategic Constraints

Despite possessing substantial geographic advantages, Indonesia continues to experience several structural constraints limiting its maritime economic competitiveness.

The empirical findings indicate that Indonesia's maritime ecosystem remains fragmented compared to more integrated regional maritime economies. Several interconnected constraints contribute to this condition.

First, domestic logistics costs remain relatively high compared to regional competitors. Inefficiencies in port connectivity, customs coordination, and intermodal transportation continue to reduce overall competitiveness within Indonesia's maritime supply chains.

Second, maritime industrial integration remains insufficient. Indonesia possesses significant natural resources and strategic positioning; however, industrial linkages connecting ports, refineries, logistics systems, and export-processing zones remain unevenly developed.

Third, maritime financial services remain relatively underdeveloped. Much of the high-value economic activity associated with shipping finance, marine insurance, and maritime arbitration continues to be concentrated outside Indonesia.

Fourth, institutional fragmentation within maritime governance systems continues to constrain policy coordination and investment efficiency. Regulatory overlap and bureaucratic complexity frequently reduce operational effectiveness within logistics and maritime infrastructure development.

Collectively, these constraints reinforce Indonesia's position as a passive transit economy rather than a dominant maritime value creator.

Maritime Industrialization as Strategic Transformation

The findings suggest that maritime industrialization constitutes one of the most important strategic priorities for enhancing Indonesia's maritime competitiveness.

Maritime industrialization refers not only to shipbuilding or port construction, but also to the development of integrated industrial ecosystems linked to maritime trade and logistics systems. These ecosystems may include petrochemical industries, refinery integration, maritime manufacturing, logistics services, marine technology sectors and export-oriented industrial clusters.

Countries possessing advanced maritime-industrial ecosystems generally demonstrate greater capacity to internalize economic rents generated through global maritime trade.

Within Indonesia, western maritime regions particularly northern Sumatra possess significant potential to develop into integrated maritime-industrial corridors due to their proximity to major Indo-Pacific shipping routes.

Strategic industrial integration could generate long-term benefits, including increased export competitiveness, higher industrial spillovers, improved logistics efficiency, stronger supply-chain integration, and greater domestic maritime value capture.

Such transformation would also reduce Indonesia's dependence on commodity-based economic structures and strengthen resilience within the evolving Indo-Pacific economy.

Logistics Sovereignty and National Competitiveness

This study further proposes the concept of Logistics Sovereignty as an emerging strategic dimension of national competitiveness.

Logistics sovereignty refers to the ability of states to maintain strategic control over critical logistics systems, reduce external dependency, secure supply-chain resilience and capture domestic economic value from transportation networks.

The COVID-19 pandemic and recent geopolitical disruptions demonstrated the vulnerability of highly concentrated global supply chains. As a result, logistics resilience and strategic connectivity have become increasingly important components of economic security.

For Indonesia, strengthening logistics sovereignty requires smart-port integration, digital customs systems, maritime cybersecurity, integrated inter-island logistics and advanced freight coordination systems.

The regression results indicate that logistics performance represents one of the strongest determinants of economic competitiveness among maritime economies. Consequently, improving logistics efficiency should not be viewed merely as an infrastructure issue, but as a broader geo-economic strategy.

Smart Ports and Digital Maritime Governance

The digital transformation of maritime logistics systems is likely to become a decisive factor shaping future maritime competitiveness.

Advanced maritime economies increasingly utilize artificial intelligence, blockchain-based trade systems, automated cargo handling, predictive logistics systems and integrated digital customs coordination.

These technologies improve operational efficiency, cargo transparency, supply-chain reliability and trade facilitation.

Singapore has emerged as one of the leading examples of digital maritime governance within the region. Its integration of smart-port technologies and digital logistics systems significantly enhances operational efficiency and maritime ecosystem competitiveness.

For Indonesia, accelerating digital maritime transformation could substantially reduce logistics inefficiencies and improve integration within global supply chains.

Digital maritime governance should therefore become an integral component of Indonesia's long-term maritime development strategy.

Indo-Pacific Supply Chain Restructuring

The evolving geopolitical and economic environment within the Indo-Pacific also creates strategic opportunities for Indonesia.

Recent supply-chain restructuring trends indicate that multinational corporations increasingly seek diversification, resilience and reduced dependence on concentrated production centers.

This shift may create opportunities for Southeast Asian economies possessing strategic geographic positioning and large domestic markets.

Indonesia is well positioned to benefit from these transformations due to its strategic maritime location, large labor force, extensive domestic market and abundant natural resources.

However, realizing these opportunities requires substantial improvements in logistics competitiveness, industrial coordination, institutional efficiency and investment certainty.

Without structural modernization, Indonesia risks remaining strategically important but economically underleveraged within emerging Indo-Pacific production networks.

Policy Matrix for Maritime Economic Transformation

Table 7. Strategic Policy Framework for Indonesia

Strategic Issue	Structural Constraint	Recommended Policy	Expected Impact
High logistics costs	Fragmented logistics systems	Integrated smart-port systems	Improved competitiveness
Limited maritime value capture	Weak maritime services	Maritime ecosystem development	Higher domestic rent capture
Industrial fragmentation	Limited industrial integration	Maritime-industrial clusters	Stronger spillover effects
Institutional inefficiency	Regulatory overlap	Governance reform	Greater investment efficiency
Digital logistics gaps	Low digital integration	Maritime digitalization	Supply-chain resilience
Dependence on transit economy	Limited value-added sectors	Refinery and logistics expansion	Economic diversification

The policy framework demonstrates that maritime competitiveness requires integrated institutional, industrial, and technological transformation rather than isolated infrastructure expansion alone.

Theoretical Implications

The findings of this study generate several broader theoretical implications.

First, the study demonstrates that strategic maritime corridors should be analyzed not only through military and geopolitical frameworks, but also through geo-economic and logistics-capitalism perspectives.

Second, the concept of Geo-Economic Leakage provides an analytical framework for understanding why geographically strategic states may fail to internalize economic value generated within their own maritime environments.

Third, the findings suggest that ecosystem integration increasingly constitutes the principal determinant of maritime economic competitiveness in the contemporary global economy.

Finally, the study contributes to the growing literature concerning the relationship between logistics systems, infrastructure governance, and international political economy within the Indo-Pacific region.

CONCLUSION

This study examined the Malacca Strait not merely as a conventional maritime chokepoint but as a geo-economic system in which strategic maritime flows generate substantial economic rents through logistics integration, maritime services, financial intermediation, industrial ecosystems, and supply-chain coordination, finding that maritime competitiveness within this system is increasingly determined by ecosystem integration rather than territorial

proximity alone, as economies possessing advanced logistics systems, institutional efficiency, digital maritime governance, and integrated industrial ecosystems demonstrate substantially greater capacity to internalize economic rents from global maritime trade flows, with empirical analysis confirming that logistics performance, maritime industrialization, trade integration, and port throughput positively influence economic outcomes among selected Southeast Asian maritime economies with logistics competitiveness emerging as the most dominant variable. Using Indonesia as the principal case study, the study identifies a structural condition termed *Geo-Economic Leakage* the inability of geographically strategic states to capture proportional economic value from surrounding maritime systems driven by fragmented logistics systems, uneven infrastructure integration, underdeveloped maritime services, relatively high logistics costs, and institutional fragmentation, while Singapore demonstrates by contrast how an integrated maritime ecosystem encompassing advanced port systems, maritime finance, marine insurance, bunkering, refinery ecosystems, and digital logistics governance can generate substantial economic rents despite limited territorial scale. The study ultimately concludes that future strategic competition across the Indo-Pacific will increasingly revolve around the control of maritime ecosystems and logistics systems rather than traditional territorial dominance, and that Indonesia must prioritize integrated maritime ecosystem development, maritime industrialization, and logistics sovereignty through smart-port integration and institutional reform to capture opportunities arising from Indo-Pacific supply-chain restructuring, while theoretically contributing two novel analytical concepts *Geo-Economic Rent Corridor* and *Geo-Economic Leakage* as alternative frameworks applicable to strategic maritime corridors beyond Southeast Asia.

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