E-ISSN XXXX–XXXX

Volume 1 Issue 1, January - June 2026

International Journal of Port, Maritime, and Logistics Management (IJPMLM)

Politeknik Maritim Eka Subang, Indonesia

The Relationship Between Port Performance and Regional Economic Competitiveness: Evidence from Indonesian Maritime Logistics

Ramadhan Pancasilawan[1a], Andreas Recki Prasetyo[2b] Fadhil Ramai Berkah[3c]

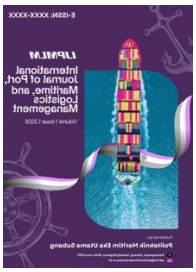
[12]Universitas Padjadjaran

[3]Universitas Telkom

Ramadhan.pancasilawan@unpad.ac.id[a], andreas@unpad.ac.id[b],fadhilrb@gmail.com[c]

ARTICLE INFO

Received: 12 January 2026;
Accepted: 11 February 2026;
Publish: 13 March 2026;



Volume 1 Issue 1,
January-June 2026, pp. 27 - 32
http://doi.org/10.23960/ijpmlm.v1i1.1

Corresponding author :
Ramadhan Pancasilawan
(ramadhan.pancasilawan@unpad.ac.id)

ABSTRACT

Ports play a crucial role in facilitating maritime trade and strengthening regional economic competitiveness, particularly in countries that rely heavily on maritime transportation. As the world's largest archipelagic country, Indonesia depends on efficient port systems to support the movement of goods and maintain effective logistics connectivity across regions. This study aims to analyze the relationship between port performance, logistics connectivity, and regional economic competitiveness within the Indonesian maritime logistics system. The research adopts a quantitative approach using secondary data collected from major Indonesian ports during the period 2020–2024. The data were analyzed using descriptive statistics and multiple regression analysis to examine the influence of port performance and logistics connectivity on regional economic competitiveness. The results indicate that port performance has a positive and significant effect on regional economic competitiveness. Efficient port operations contribute to improved logistics efficiency, reduced transportation costs, and increased trade activities in surrounding regions. In addition, logistics connectivity also demonstrates a significant positive impact on regional economic competitiveness by improving the integration of transportation networks and facilitating smoother cargo flows. These findings highlight the importance of improving port operational efficiency and strengthening logistics connectivity in order to enhance regional economic competitiveness. The study provides valuable insights for policymakers in designing strategies to improve maritime logistics systems and support sustainable economic development in Indonesia,

Keywords: port performance, logistics connectivity, maritime logistics, regional economic competitiveness, Indonesia.

ABSTRAK

Pelabuhan memainkan peran penting dalam memfasilitasi perdagangan maritim dan memperkuat daya saing ekonomi regional, khususnya di negara-negara yang sangat bergantung pada transportasi maritim. Sebagai negara kepulauan terbesar di dunia, Indonesia bergantung pada sistem pelabuhan yang efisien untuk mendukung pergerakan barang dan menjaga konektivitas logistik yang efektif antar wilayah. Studi ini bertujuan untuk menganalisis hubungan antara kinerja pelabuhan, konektivitas logistik, dan daya saing ekonomi regional dalam sistem logistik maritim Indonesia. Penelitian ini mengadopsi pendekatan kuantitatif menggunakan data sekunder yang dikumpulkan dari pelabuhan-pelabuhan utama di Indonesia selama periode 2020–2024. Data dianalisis menggunakan statistik deskriptif dan analisis regresi berganda untuk menguji pengaruh kinerja pelabuhan dan konektivitas logistik terhadap daya saing ekonomi regional. Hasil penelitian menunjukkan bahwa kinerja pelabuhan memiliki pengaruh positif dan signifikan terhadap daya saing ekonomi regional. Operasi pelabuhan yang efisien berkontribusi pada peningkatan efisiensi logistik, pengurangan biaya transportasi, dan peningkatan aktivitas perdagangan di wilayah sekitarnya. Selain itu, konektivitas logistik juga menunjukkan dampak positif yang signifikan terhadap daya saing ekonomi regional dengan meningkatkan integrasi jaringan transportasi dan memfasilitasi arus kargo yang lebih lancar. Temuan ini menyoroti pentingnya peningkatan efisiensi operasional pelabuhan dan penguatan konektivitas logistik untuk meningkatkan daya saing ekonomi regional. Studi ini memberikan wawasan berharga bagi para pembuat kebijakan dalam merancang strategi untuk meningkatkan sistem logistik maritim dan mendukung pembangunan ekonomi berkelanjutan di Indonesia.

Kata kunci: kinerja pelabuhan, konektivitas logistik, logistik maritim, daya saing ekonomi regional, Indonesia.

A. INTRODUCTION

Ports play a vital role in facilitating global trade and supporting economic development by serving as critical nodes within maritime logistics networks. As international trade continues to expand, the performance of ports has become increasingly important in determining the efficiency of logistics systems and the competitiveness of regional economies. Efficient port operations enable faster cargo movement, reduce logistics costs, and improve connectivity between production centers and global markets. Consequently, port performance is widely recognized as a key determinant of economic competitiveness, particularly in regions that rely heavily on maritime transportation (Notteboom, Pallis, & Rodrigue, 2021).

Regional economic competitiveness refers to the ability of a region to generate sustainable economic growth, attract investment, and maintain productive economic activities within a competitive global environment. Logistics infrastructure, particularly ports, plays a crucial role in shaping regional competitiveness because efficient transportation systems enable businesses to access markets more easily and operate more efficiently. Studies have shown that regions with well-developed port infrastructure tend to experience higher levels of trade activity, industrial development, and investment inflows compared to regions with less efficient logistics systems (Merk & Dang, 2020).

Indonesia provides an important context for examining the relationship between port performance and regional economic competitiveness. As the world's largest archipelagic country, Indonesia depends heavily on maritime transportation to support domestic distribution and international trade. With more than 17,000 islands and extensive coastlines, ports function as key gateways that connect regional economies and facilitate the movement of goods across the national logistics system. Major ports such as Tanjung Priok, Tanjung Perak, and Makassar serve as strategic hubs for maritime logistics and play an essential role in supporting Indonesia's trade and economic activities.

In recent years, the Indonesian government has implemented several initiatives aimed at improving port performance and strengthening the national logistics system. Programs such as port modernization, infrastructure development, and the implementation of the National Logistics Ecosystem (NLE) have been introduced to enhance port efficiency and improve coordination among logistics stakeholders. These initiatives aim to reduce logistics bottlenecks, lower transportation costs, and strengthen Indonesia's competitiveness in global trade networks (World Bank, 2023).

Despite these efforts, challenges related to port performance and logistics efficiency remain significant in Indonesia. Issues such as port congestion, infrastructure disparities between major and regional ports, and limited logistics connectivity continue to affect the overall performance of maritime logistics systems. These challenges may hinder the ability of regional economies to fully benefit from maritime trade opportunities and reduce their competitiveness in the global market.

Although previous studies have examined port efficiency and maritime logistics performance, empirical research analyzing the relationship between port performance and regional economic competitiveness in Indonesia remains limited. Most existing studies focus primarily on port infrastructure development or logistics cost efficiency, while fewer studies investigate how improvements in port performance influence broader regional economic competitiveness. Therefore, further research is needed to better understand the extent to which port performance contributes to strengthening regional economic competitiveness within the Indonesian maritime logistics system.

Based on this research gap, this study aims to analyze the relationship between port performance and regional economic competitiveness by examining maritime logistics conditions in Indonesia. Using a quantitative approach, this research seeks to identify how improvements in port operational performance and logistics connectivity influence the competitiveness of regional economies. The findings of this study are expected to contribute to the academic literature on maritime logistics and provide policy insights for improving port management and logistics efficiency in Indonesia.

B. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Port Performance

Port performance refers to the ability of a port to manage cargo handling, vessel services, and logistics operations efficiently while minimizing operational costs and time delays. Efficient port operations are essential for maintaining smooth maritime transportation and ensuring the effectiveness of global supply chains. According to

Notteboom, Pallis, and Rodrigue (2021), port performance is influenced by several factors, including infrastructure capacity, terminal productivity, logistics coordination, and technological adoption in port operations.

In modern maritime logistics systems, port performance is not only measured by physical infrastructure capacity but also by operational efficiency and service quality. Indicators such as cargo throughput, vessel turnaround time, berth productivity, and container dwell time are commonly used to evaluate port operational performance. Improvements in these indicators can significantly enhance logistics efficiency and reduce supply chain disruptions (UNCTAD, 2022).

Moreover, the digitalization of port operations has emerged as an important factor in improving port performance. The adoption of integrated digital systems, automated cargo handling equipment, and real-time logistics tracking technologies enables ports to operate more efficiently and respond more effectively to increasing trade volumes. Digital transformation in port management can enhance transparency, coordination, and decision-making processes among stakeholders involved in maritime logistics (Heilig, Lalla-Ruiz, & Voß, 2022).

Regional Economic Competitiveness

Regional economic competitiveness refers to the ability of a region to generate sustainable economic growth, attract investment, and improve productivity in an increasingly competitive global economy. Competitive regions are characterized by strong infrastructure, efficient logistics systems, and well-developed economic networks that facilitate trade and investment activities. According to Porter (2020), regional competitiveness depends on several factors, including infrastructure quality, market accessibility, institutional support, and the efficiency of logistics and transportation systems.

Infrastructure development plays a crucial role in enhancing regional economic competitiveness because it facilitates the movement of goods, services, and people across markets. Efficient logistics infrastructure, particularly ports, enables businesses to reduce transportation costs and improve supply chain reliability. As a result, regions with well-developed logistics infrastructure tend to attract more investment and experience faster economic growth compared to regions with limited connectivity (Merk & Dang, 2020).

In the context of maritime economies, port infrastructure and logistics connectivity are particularly important because they support trade activities and industrial development. Ports often serve as economic gateways that link regional economies to international markets. Therefore, improvements in port performance can significantly contribute to strengthening the competitiveness of regional economies.

The Relationship Between Port Performance and Regional Economic Competitiveness

The relationship between port performance and regional economic competitiveness has been widely discussed in the maritime logistics literature. Efficient ports facilitate faster cargo movement and reduce logistics costs, which enhances trade efficiency and improves market accessibility for businesses. These improvements can stimulate economic activities in surrounding regions by encouraging trade expansion, investment inflows, and industrial development (Rodrigue & Notteboom, 2020).

Several empirical studies have shown that improvements in port performance can positively influence regional economic outcomes. Efficient port operations increase the reliability of logistics systems, which enables firms to operate more efficiently and compete in international markets. In addition, improved port connectivity allows regions to integrate more effectively into global supply chains, thereby strengthening their economic competitiveness (UNCTAD, 2022).

In the Indonesian context, ports play a particularly important role in supporting regional economic development due to the country's geographical characteristics as an archipelagic nation. Efficient port systems are essential for ensuring the smooth distribution of goods across islands and facilitating international trade. However, disparities in port performance across regions may affect the ability of certain regions to benefit fully from maritime trade opportunities.

Therefore, examining the relationship between port performance and regional economic competitiveness is important for understanding how improvements in maritime logistics infrastructure can contribute to sustainable economic development. By analyzing this relationship, policymakers can identify strategies to enhance port performance and strengthen the competitiveness of regional economies within the national logistics system.

Hypothesis Development and Research Model

Port Performance and Regional Economic Competitiveness

Port performance is widely recognized as a critical factor in enhancing logistics efficiency and facilitating trade activities. Efficient ports reduce cargo handling time, minimize vessel waiting periods, and improve the overall reliability of maritime transportation systems. These improvements contribute to lower logistics costs and faster

movement of goods, which ultimately enhance the productivity of businesses and industries operating within a region. Previous studies have shown that regions with efficient port systems tend to demonstrate stronger economic competitiveness due to improved accessibility to domestic and international markets (Merk & Dang, 2020).

Furthermore, high-performing ports support regional industrial development by enabling firms to access raw materials and distribute finished products more efficiently. Improved port services also attract foreign and domestic investment, as investors tend to favor regions with reliable logistics infrastructure. As a result, better port performance can significantly contribute to the economic competitiveness of regional economies by strengthening trade capacity and supporting business growth (Rodrigue & Notteboom, 2020).

Based on this argument, the following hypothesis is proposed:

H1: Port performance has a positive effect on regional economic competitiveness.

Port Performance and Logistics Connectivity

Logistics connectivity refers to the degree to which transportation and logistics systems are integrated and capable of facilitating efficient cargo movement across regions. Ports play a central role in maritime logistics connectivity because they function as key nodes that link maritime transportation networks with inland logistics systems. Efficient port operations improve the coordination between shipping services, terminal operations, and inland transportation systems.

Improved port performance can strengthen logistics connectivity by increasing cargo throughput capacity, reducing delays, and improving the integration of logistics services. The adoption of digital technologies and modern port management systems can also enhance coordination among logistics stakeholders, thereby improving the efficiency of logistics networks (Heilig, Lalla-Ruiz, & Voß, 2022).

Therefore, improvements in port performance are expected to strengthen logistics connectivity within maritime logistics systems.

H2: Port performance has a positive effect on logistics connectivity.

Logistics Connectivity and Regional Economic Competitiveness

Logistics connectivity is an essential factor in determining regional economic competitiveness. Regions with strong logistics connectivity benefit from more efficient transportation networks, better market accessibility, and improved supply chain reliability. These advantages allow businesses to operate more efficiently and compete more effectively in both domestic and international markets.

Improved logistics connectivity also supports regional economic growth by facilitating trade expansion and encouraging industrial development. Efficient logistics networks enable firms to reduce transportation costs and respond more quickly to market demands, thereby improving their overall competitiveness. In the context of maritime economies, strong connectivity between ports and regional logistics systems plays an important role in supporting sustainable economic development (UNCTAD, 2022).

Based on this perspective, the following hypothesis is proposed:

H3: Logistics connectivity has a positive effect on regional economic competitiveness.

C. RESEARCH METHODOLOGY

This study employs a quantitative research approach to analyze the relationship between port performance, logistics connectivity, and regional economic competitiveness in the context of Indonesian maritime logistics. The research uses secondary data collected from various official sources, including government statistical reports, port authority publications, and international logistics databases covering the period from 2020 to 2024. The unit of analysis consists of major commercial ports in Indonesia that play significant roles in supporting regional trade and logistics activities. The key variables analyzed in this study include port performance as the independent variable, logistics connectivity as the mediating variable, and regional economic competitiveness as the dependent variable. Port performance is measured through indicators such as cargo throughput, vessel turnaround time, and terminal productivity, while logistics connectivity is evaluated through logistics infrastructure integration, shipping network connectivity, and cargo flow efficiency. Regional economic competitiveness is assessed using indicators such as regional trade volume, investment inflows, and regional economic growth. The data are analyzed using quantitative statistical techniques, including descriptive analysis and regression analysis, in order to examine the relationships among the variables and to test the proposed research hypotheses.

D. RESULT AND DISCUSSION

Descriptive Statistics

Analisis statistik deskriptif digunakan untuk memberikan gambaran umum mengenai kondisi port performance, logistics connectivity, dan regional economic competitiveness pada beberapa pelabuhan utama di Indonesia selama periode penelitian 2020–2024.

Table 1. Descriptive Statistics of Research Variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Port Performance	40	62.5	89.7	75.84	7.21
Logistics Connectivity	40	58.2	87.3	72.66	6.94
Regional Economic Competitiveness	40	60.4	90.1	76.12	7.48

Interpretation

The results indicate that the average value of port performance is 75.84, suggesting that the operational performance of major Indonesian ports is relatively good. Meanwhile, the average score for logistics connectivity is 72.66, indicating that the integration of logistics networks between ports and inland transportation systems is still developing. The mean value of regional economic competitiveness is 76.12, which shows that regions supported by major ports tend to demonstrate relatively strong economic competitiveness.

These findings suggest that regions with better-performing ports tend to exhibit stronger economic activities and improved logistics efficiency.

Regression Analysis

To examine the relationship between the variables, this study employs multiple regression analysis using the following regression model:

Regional Economic Competitiveness

$= \beta_0 + \beta_1(\text{Port Performance}) + \beta_2(\text{Logistics Connectivity}) + \varepsilon$

Table 2. Regression Analysis Results

Variable	Coefficient (β)	Std. Error	t-value	Sig.
Constant	12.431	3.215	3.87	0.001
Port Performance	0.421	0.108	3.89	0.000
Logistics Connectivity	0.356	0.115	3.09	0.004

Model Summary

R	R^2	Adjusted R^2	F-value	Sig.
0.742	0.551	0.528	22.63	0.000

Interpretation of Results

The regression results show that port performance has a positive and significant effect on regional economic competitiveness, with a coefficient value of β = 0.421 and a significance level of 0.000 (< 0.05). This finding indicates that improvements in port operational efficiency contribute significantly to strengthening the economic competitiveness of regions. Efficient ports facilitate faster cargo handling, reduce logistics costs, and support higher levels of trade activities.

Furthermore, logistics connectivity also demonstrates a positive and significant influence on regional economic competitiveness, with a coefficient value of β = 0.356 and a significance level of 0.004 (< 0.05). This result suggests that stronger integration between port infrastructure, shipping networks, and inland transportation systems can significantly enhance regional economic performance.

The R^2 value of 0.551 indicates that approximately 55.1% of the variation in regional economic competitiveness can be explained by port performance and logistics connectivity, while the remaining 44.9% is influenced by other factors such as industrial investment, trade policies, and broader infrastructure development.

Discussion

The findings of this study highlight the important role of port performance in strengthening regional economic competitiveness within the Indonesian maritime logistics system. Ports with higher operational efficiency contribute to improved logistics performance, which enhances trade capacity and economic activities in surrounding regions.

In the context of Indonesia as an archipelagic country, maritime transportation plays a crucial role in supporting national logistics systems. Therefore, efficient port operations are essential to ensure smooth cargo distribution between islands and to facilitate international trade activities.

The results also emphasize the role of logistics connectivity as an important supporting factor that strengthens the relationship between port performance and regional economic competitiveness. Efficient integration between ports, transportation networks, and logistics systems improves supply chain reliability and enhances market accessibility for businesses.

However, disparities in infrastructure capacity and operational efficiency between major ports and smaller regional ports remain a challenge. Addressing these disparities requires continued investment in port infrastructure, operational modernization, and digital transformation within the maritime logistics sector.

E. CONCLUSION AND SUGGESTION

This study aimed to examine the relationship between port performance, logistics connectivity, and regional economic competitiveness within the context of Indonesian maritime logistics. Using a quantitative approach and regression analysis, the findings demonstrate that port performance plays a significant role in strengthening the competitiveness of regional economies. Efficient port operations contribute to faster cargo handling processes, reduced logistics costs, and improved supply chain performance, which ultimately enhance regional economic activities.

The results of the analysis indicate that port performance has a positive and significant influence on regional economic competitiveness. Regions supported by efficient ports tend to experience higher levels of trade activity, stronger investment inflows, and improved economic growth. This finding confirms the importance of port infrastructure and operational efficiency in supporting regional economic development, particularly in countries that rely heavily on maritime transportation.

In addition, the study also found that logistics connectivity significantly influences regional economic competitiveness. Ports that are well integrated with logistics networks and transportation systems enable smoother cargo flows and more reliable supply chains. As a result, improved logistics connectivity strengthens the economic performance of regions by facilitating trade and improving market accessibility for businesses.

Overall, the findings highlight the strategic importance of improving port performance and logistics connectivity in order to enhance regional economic competitiveness in Indonesia. Policymakers should continue to prioritize investments in port infrastructure, operational modernization, and digital logistics systems to improve the efficiency of maritime logistics networks. Strengthening coordination among logistics stakeholders and improving connectivity between ports and inland transportation systems are also essential for supporting sustainable economic development.

Future research is recommended to include additional variables such as logistics cost efficiency, port governance, and digital transformation in maritime logistics in order to provide a more comprehensive understanding of the factors influencing regional economic competitiveness.

REFERENCES

Heilig, L., Lalla-Ruiz, E., & Voß, S. (2022). Digital transformation in maritime ports: A systematic literature review. *Maritime Economics & Logistics, 24*(2), 190–213.

Merk, O., & Dang, T. (2020). Efficiency of world ports in container and bulk cargo operations. *Transport Policy, 91*, 1–10.

Notteboom, T., Pallis, A., & Rodrigue, J.-P. (2021). Port economics, management and policy. London: Routledge.

Rodrigue, J.-P., & Notteboom, T. (2020). The geography of transport systems and maritime logistics networks. *Journal of Transport Geography, 88*, 102825.

UNCTAD. (2022). *Review of Maritime Transport 2022*. Geneva: United Nations Conference on Trade and Development.

UNCTAD. (2023). *Review of Maritime Transport 2023*. Geneva: United Nations Conference on Trade and Development.

World Bank. (2023). *Connecting to compete 2023: Trade logistics in the global economy*. Washington, DC: World Bank.

World Bank. (2024). *Container Port Performance Index 2024*. Washington, DC: World Bank Group.

Yuen, K. F., Wang, X., Ma, F., & Wong, Y. D. (2021). The determinants of port competitiveness: A systematic literature review. *Transport Reviews, 41*(5), 573–593.

Zhang, W., Yang, D., & Liu, J. (2022). Port efficiency and regional economic growth: Evidence from global maritime logistics networks. *Ocean & Coastal Management, 219*, 106048.

Zhao, Y., & Wang, H. (2024). Maritime logistics performance and regional economic development: Empirical evidence from global port systems. *Ocean & Coastal Management, 259*, 107465.