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The Significant Effect of Infrastructure Development on Logistics Performance Index

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The author(s) declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Abstract

Purpose: This study aims to explore the correlation between infrastructure development and LPI.

Research Design and Methodology: A systematic literature review and bibliometric analysis were employed in this study, with a total of 82 pieces of literature relevant to the topic under discussion. Network and DAG visualizations were also created, each designed to map research topics and illustrate the causal relationships between the two subjects.

Findings and Discussion: The results of this study confirm a significant relationship between infrastructure and LPI, with trade sector acting as a mediating factor. The results also show that ports and roads are infrastructure that should not be overlooked. Good governance and government are essential.

Implications: In practice, policymakers should not ignore the impact of infrastructure development, especially on ports and roads. The development of communication networks (both internal and external channels) is recommended to improve government governance in managing infrastructure.

Introduction

The relationship between infrastructure development and logistics performance has become increasingly crucial for the economies of developing countries, particularly as they strive to enhance their competitiveness in global trade. Specifically, infrastructure investment has long been regarded as an accelerator or driver of economic growth, leading to GDP expansion (Holmgren & Merkel, 2017; Seidu et al., 2020). Infrastructure is distinct because it spans a long time, has significant impacts, and influences the economy over time. Compared to other construction types, infrastructure has longer operational periods, more complex supply chains, and greater impacts on communities (Chan et al., 2022).

In recent years, many developing countries have been scaling up infrastructure investment, primarily through public spending, with a growing participation from the private sector (Gurara et al., 2018). Several previous studies and reports state that Indonesia's infrastructure development has been ongoing for quite some time, in accordance with national priorities (Ma'rifah, 2022). Indonesia is actively implementing infrastructure development in accelerating economic growth (Maryani & Abidin, 2022). The 1997 Asian financial crisis prompted the government to prioritize strengthening

formal institutions over the next 15 years to enhance public investment efficiency and attract private investors, leading to accelerated infrastructure development in Indonesia in the second half of the 2010s (Kim, 2023). However, its development was not as smooth as anticipated. The country's infrastructure competitiveness has declined, with a ranking drop to 72nd from 53rd out of 141 countries in 2019 (Putra, 2020; Sulistyowati & Wibowo, 2022). Decades of under-investment and poor asset management have left Indonesia with a significant infrastructure deficit, the economic and social costs of which are substantial (Ray & Ing, 2016).

Indonesia's logistics performance in 2023 ranked 61st out of 139 countries, representing a significant decline in its global logistics efficiency ranking, which had been ranked 45th in 2018 (Arvis, 2023). The Logistics Performance Index (LPI) is an indicator for measuring logistics sector performance, based on a survey developed by the World Bank since 2007 and widely accepted worldwide (Ulkhaq, 2023). The LPI measurement is evaluated using a 5-point scale and is based on six dimensions, specifically customs, infrastructure, international shipments, logistics competence and quality, timelines, and tracking & tracing. The 2023 LPI indicates progress in customs and infrastructure but reveals declines in international shipping, logistics quality and competence, timeliness, as well as tracking and tracing (Iskandar & Arifin, 2023). In terms of infrastructure, Indonesia obtained an improvement of 0.01 points from the previous period, which was 2.89, bringing the current score to 2.9 (Arvis, 2023). Despite the minor increase in this sector, it remains small enough to be considered an improvement over the previous period.

Table 1. LPI Scores of ASEAN Countries in 2023

Country	LPI	Customs	Infrastructure	International Shipments	Logistics Competence	Tracking and Tracing	Timeliness Score
Singapore	4.3	4.2	4.6	4	4.4	4.4	4.3
Malaysia	3.6	3.3	3.6	3.7	3.7	3.7	3.7
Thailand	3.5	3.3	3.7	3.5	3.5	3.6	3.5
Philippines	3.3	2.8	3.2	3.1	3.3	3.3	3.9
Vietnam	3.3	3.1	3.2	3.3	3.2	3.4	3.3
Indonesia	3.0	2.8	2.9	3.0	2.9	3.0	3.3
Lao PDR	2.4	2.3	2.3	2.3	2.4	2.4	2.8
Cambodia	2.4	2.2	2.1	2.3	2.4	2.8	2.7

Source: *WorldBank LPI Report 2023*

Table 1 illustrates Indonesia's LPI performance in comparison to ASEAN peers, in which Indonesia scored 3.0 out of 5.0, placing it sixth among ASEAN nations and on par with several other countries that have similar scores (3.0) such as Bosnia-Herzegovina, Chile, Peru, and Uruguay. Countries with an advantageous geographical location and strong government support, such as Singapore, which Indonesia lacks in these aspects, are more likely to have strong comprehensive logistics capabilities. (Yifan, 2024)Another key factor hindering Indonesia's logistics sector is poor infrastructure, which has been a significant challenge for the sector over the past decade, contributing to high logistics costs, unsatisfactory logistics performance, and overall low sector efficiency. (Barata, 2020; Setiawan, 2023). The economic disparity between Indonesia's eastern and western regions exacerbates these infrastructure challenges, leading to inefficiencies in shipping and distribution. (Triantoro, 2020).

Given the critical role of infrastructure in economic and trade activities, the decline in Indonesia's infrastructure competitiveness raises concerns about its potential impact on logistics performance. Countries with low LPI scores tend to have poor trade and transportation infrastructure

(Koyuncu et al., 2023). Poor infrastructure raises transportation costs, which directly affect the LPI scores related to cost efficiency (YILDIZ & TABAK, 2019). Furthermore, poor infrastructure complicates customs clearance processes, leading to longer wait times and lower efficiency scores in the LPI (Iskandar & Arifin, 2023). Addressing these issues is crucial for sustainable development in logistics and trade (Liu, 2024).

Sluggish progress in logistics infrastructure development presents a significant challenge for Indonesia's Logistics Performance Index (LPI). As a preliminary study, this research aims to map the correlation between logistics infrastructure development and the LPI, providing an initial exploration of this critical relationship. The analysis conducted in this study provides valuable insights into several aspects that require attention in Indonesia's LPI, particularly in terms of logistics infrastructure. By identifying key gaps and areas for improvement, this study lays the groundwork for future research and policy interventions aimed at enhancing Indonesia's logistics performance.

Literature Review

Infrastructure can be defined as the physical components of interrelated systems that provide services essential to enable, sustain, or enhance societal living conditions (Adl-Zarrabi, 2017). It consists of tangible assets such as roads, railways, airports, and utilities that facilitate transportation and communication (Knox et al., 2023). Their critical role in ensuring economic activity and living conditions for communities often requires significant investment and coordination between various stakeholders (Fiedler & Wendler, 2016). Infrastructure is also recognized as an indicator in many expert-based methods, including LPI, Global Competitiveness Index (GCI), Travel & Tourism Competitiveness Index (TTCI), IMD World Competitiveness Ranking, and Engagement Index of Countries in International Trade (ETI) (Ivut et al., 2023).

The Logistics Performance Index (LPI) is a tool developed by the World Bank for countries to benchmark and assess their performance in the global logistics business (Göçer et al., 2022). The LPI is widely used in the logistics sector, both nationally and internationally (Jonášíková et al., 2025). It comprises six key dimensions, including customs, infrastructure, international shipments, logistics quality and competence, tracking and tracing, and timeliness (Mešić et al., 2022).

Research Design and Methodology

This study employs a combination of bibliometric analysis and systematic literature review (SLR), which involves a thorough search of research studies and an understanding of research trends. Bibliometrics is used to visualize research correlations from metadata. Meanwhile, the SLR is carried out to retrieve and evaluate all relevant studies related to the topic discussed, in order to draw conclusions about the research question.

Bibliometric analysis was conducted using two software programs, namely Publish or Perish and VOSviewer. Publish or Perish (PoP) is a software developed for retrieving and analyzing academic citations. The database for bibliometrics was obtained using PoP via Google Scholar's database using the keywords "infrastructure," "logistics performance index," and "transportation" during the period 2015-2025. The database was then compiled using VOSviewer. VOSviewer is a software tool for constructing and visualizing bibliometric networks. To avoid overlapping, a minimum of 15 instances were identified. This cut-off reduced the number of initial phrases from 21778 to 359. Ultimately, only 159 were utilized after further filtering for more relevant results.

The data for SLR were obtained from reputable academic databases, including Google Scholar, ScienceDirect, Emerald, Scopus, and Taylor & Francis, among others. The SLR process is adapted from the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. The scope of the research was determined based on the Population, Intervention, Comparison, and Outcome (PICO) framework. The PICO model is often used to develop the search strategy for a systematic review. (Frandsen et al., 2020).

Table 2. PICO Framework

Criteria	Determinants
Population	Infrastructure development and LPI assessment of a country
Intervention	Impact of infrastructure and LPI
Comparison	Impact of infrastructure and LPI in other case studies
Outcomes	Correlation between infrastructure and LPI scores, along with insights about both subjects

Research questions (RQs) 1 to 3 were developed based on the PICO framework to achieve the study's goal of mapping the relationship between infrastructure and the Logistics Performance Index.

- RQ 1: What is the correlation between infrastructure development and Logistics Performance Index (LPI)?
- RQ 2: Which specific infrastructure has the most significant impact?
- RQ 3: What lessons can Indonesia learn to improve its logistics infrastructure development and logistics performance?

To eliminate uncertainty and lower the likelihood of bias in the literature study, the inclusion and exclusion criteria are applied.

Table 3. Inclusion and Exclusion Criteria

ID	Inclusion Criteria
1st IC	Peer-reviewed studies including journal articles, conference proceedings, and book chapters
2nd IC	Year of publication within the last 10 years (2015-2025)
3rd IC	Studies that discuss logistics infrastructure and/or LPI
4th IC	Study that can be accessed through academic databases or online sources
5th IC	Studies that establish connections between logistics infrastructure development, LPI, and others.
6th IC	Study that defines and assesses logistics infrastructure components and/or LPI
7th IC	The study offers a comparative analysis of countries' logistics infrastructure and/or LPI performance.
8th IC	Study supported by transparent research methodologies (quantitative, qualitative, or mixed methods)
ID	**Exclusion Criteria**
1st EC	Opinion pieces, editorials, non-empirical studies, or others
2nd EC	Published before 2015
3rd EC	Full-text not available or abstract only
4th EC	Not peer-reviewed
5th EC	Study is irrelevant to infrastructure development or LPI.
6th EC	Study focusing exclusively on company-level logistics without national infrastructure considerations
7th EC	Study lacks clarity in methods.

For this study, keywords related to the topic infrastructure and LPI were used to gather articles from multiple journal databases. The keywords "infrastructure", "logistics performance", and "logistics performance index" are commonly used as the main combination for search strings in this study; however, their use is adjusted according to the publisher's coverage. The selection of study subjects at each publisher was also done to narrow down the output results. It was based on the themes of this study, such as "engineering", "economics", and "transportation".

Table 4. Search string used for each publisher

Publisher	Search strings
ScienceDirect	"infrastructure" AND "logistics performance index" OR "logistics performance"
Springer	"infrastructure" AND "logistics performance" NOT "education" NOT "medic"
Emerald	"infrastructure" AND "logistics performance index"
Wiley Online Library	"infrastructure" AND "logistics performance index"
Sage Publications	"infrastructure" AND "logistics performance"
JSTOR	"logistics performance index" OR "logistics performance" OR "logistical performance" OR logistics AND "infrastructure OR "transportation infrastructure" OR "logistics infrastructure"
Taylor and Francis	"infrastructure" AND "logistics performance" NOT "healthcare" NOT "carbon" NOT "emission" NOT "education" NOT "LPG" NOT "sanctions" NOT "disaster"
MDPI	"logistics performance index" OR "logistics performance"

The total number of articles used and the workflow using SLR based on the PRISMA framework are shown in Figure 1. The SLR process is conducted in four stages: identification, screening, eligibility, and inclusion.

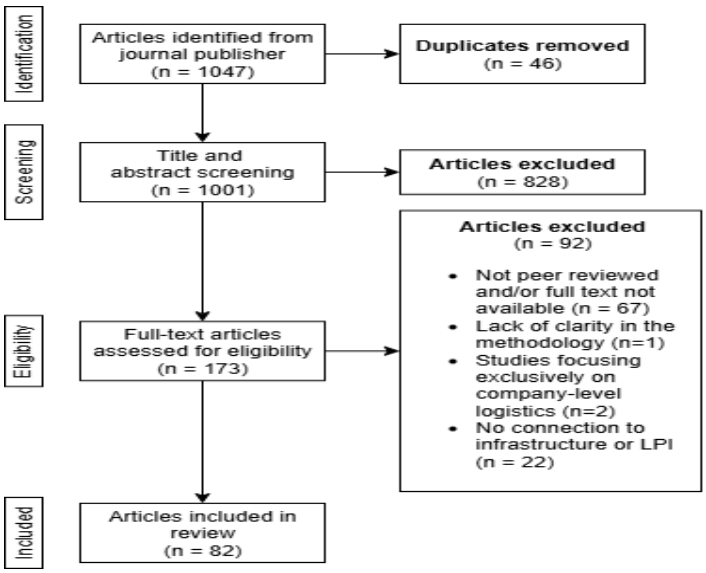

Figure 1. PRISMA Flow Diagram

At the identification stage, 1047 articles from reputable publication sources were collected. Initially, a total of 1,001 articles were selected and duplicates were removed. These articles were then

screened based on title and abstract using web-based software for managing and streamlining systematic reviews, Covidence. All 173 articles underwent a full-text review to assess their eligibility. The remaining articles were then cross-checked on the Oregon State University website to determine if they had been peer-reviewed. They were subsequently checked to see if they were accessible and retrieved, and then eliminated if they were not relevant to the main topic of discussion. After the eligibility assessment, 82 articles were included for detailed review.

Findings and Discussion

Findings

Excerpts or extracts from interviews, observational results, texts, and other sources containing answers to research questions are presented in the discussion as authentic evidence. Interpretation of results should only be included in this section if the research requires a combination of both findings and analysis in one part. The correlation between infrastructure and LPI can be examined through previous literature discussing both subjects. The map visualization was created using VOSviewer to facilitate understanding of research trends and mapping. Network visualization forms 159 related items grouped into 7 clusters.

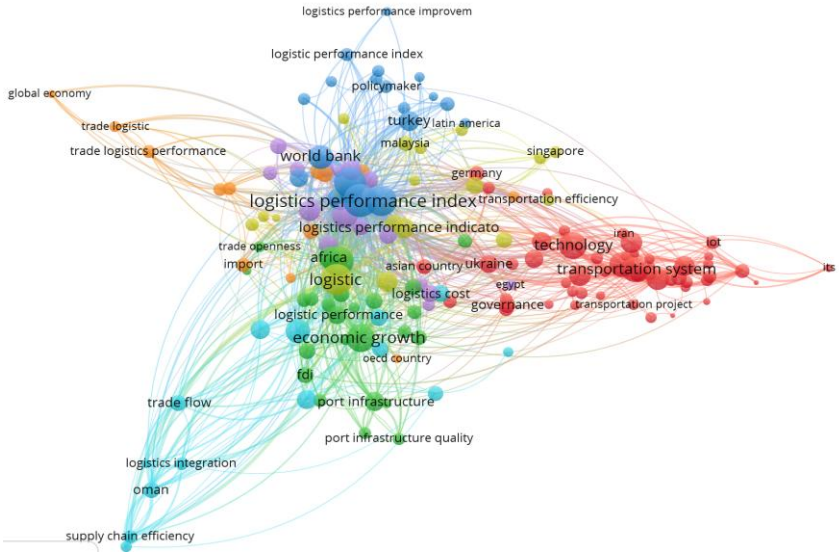

Figure 4. VOSviewer network visualization map of keywords

Source: *processed using VOSviewer*

The following clusters are represented by several keywords that indicate their link strength in each cluster. Cluster 3, also known as the blue cluster, is identified as the primary cluster occupying the central position in the network mapping. This cluster is dominated by keywords including the Logistics Performance Index (LPI) and logistics infrastructure. There are two major clusters surrounding it, namely Cluster 1 (red), which is dominated by the keywords' city', 'technology', and 'transportation', and Cluster 2 (green), which is dominated by keywords such as 'economic growth', 'port infrastructure', and 'trade'. Other clusters, although not as large as the previous three, occupy a position in between, including cluster 4, with the dominant keyword "logistics", and cluster 5, with the dominant keyword "export". Meanwhile, the clusters with the lowest correlation/network are clusters 6 and 7.

Logistics infrastructure and the Logistics Performance Index (LPI) are compelling topics of research. Increased research development in these subjects of study has been expected in recent years. A total of 1,047 unfiltered studies from the SLR database were grouped by year and publisher. The results show that research on both subjects peaked in 2021 and 2024, with ScienceDirect being the most significant contributor, accounting for a total of 213 articles. On the other hand, the publisher with the lowest contribution is MDPI with only 41 articles related to the scope of this study.

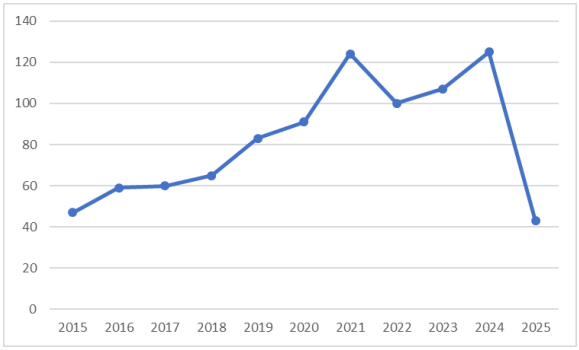

Figure 2. Yearly Number of Identified Publications from 2015-2025

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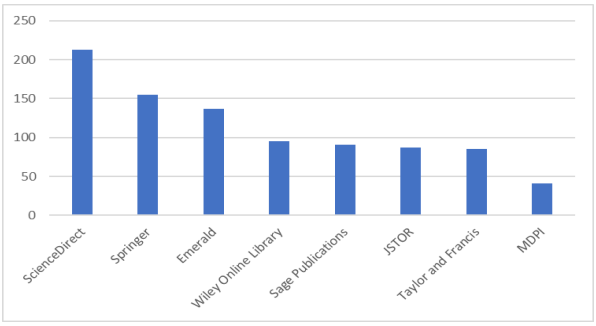

Figure 3. Frequency of published articles for each publisher

The final result of Systematic literature review presents a variety of perspectives regarding logistics infrastructure and LPI. A summary of the findings is presented in Table 8.

Table 8. Summary of findings

Findings	Studies
Infrastructure is significant to trade (export and import)	Arshed et al., 2022; Aydas et al., 2020; Çelebi, 2019; Coşkun & Civelek, 2020; El-Anis, 2021; Gani, 2017; Karymshakov & Sulaimanova, 2021; Park, 2020; Rahman et al., 2021; Sénquiz-Díaz, 2021; Siddiqui & Vita, 2021; Singh & Kathuria, 2016; Song & Lee, 2022; Sun & Kauzen, 2023; Wang et al., 2024; Yeo et al., 2020; Zakia et al., 2024
Infrastructure is significant to the economy.	Amankwah-Amoah et al., 2025; Arshed et al., 2022; Ben Haj Ahmed et al., 2023; Butkus et al., 2023; Chciałowski, 2018; Khadim et al., 2021; Munim & Schramm, 2018; Raimbekov et al., 2016; Sharapiyeva et al., 2019; Singh & Kathuria, 2016; Sun & Kauzen, 2023; Yeo et al., 2020
LPI is significant to trade	Bugarčić et al., 2020; Çelebi, 2019; Ding et al., 2023; Gani, 2017; Jayathilaka et al., 2022; Kabak et al., 2018; Siddiqui & Vita, 2021; Song & Lee, 2022; Suroso, 2022; Wang et al., 2024
LPI is significant to economic growth	Ben Haj Ahmed et al., 2023; Khadim et al., 2021; Sabir et al., 2024; Saini & Hrušecká, 2021; Suki et al., 2021; Tang & Abosedra, 2019; Yeo et al., 2020
Infrastructure and LPI are significant to each other	Bayoumi et al., 2023; Erturgut et al., 2018; Kabak et al., 2020; Özceylan et al., 2016; Sergi et al., 2021

Discussion

Correlation Between Infrastructure Development and LPI.

The implications of infrastructure can be seen in countries that are trying to improve their LPI scores. Countries worldwide strive to improve their logistics sector by investing in infrastructure and technology (Çakır, 2017). A country's position is determined based on the development of its infrastructure (Rahmanov et al., 2022). Countries that have several areas with strategic logistics bases and effectively utilize transportation networks excel in terms of their logistics performance (Özceylan et al., 2016). Additionally, infrastructure provides connectivity, accessibility, and supply chain integrity, thereby enhancing a country's logistics performance (Bayoumi et al., 2023). Infrastructure can be seen

as one of many GCI pillars that government should focus on improving logistics performance, especially within the Asia continent & Oceania region (Çemberci et al., 2015; Kabak et al., 2020; Sergi et al., 2021). This suggests that infrastructure-related issues are at their lowest level in the major cities of countries with high logistical performance (Erturgut et al., 2018). Infrastructure is considered to have the most significant influence of the other five dimensions, and is seen as over twice as important as tracking and tracing for logistics performance (Rezaei et al., 2018; Ulutaş & Karaköy, 2019). In addition to the correlation between the two main subjects, other perspectives suggest that both can also be seen through mediating aspects such as trade, including imports and exports (Gani, 2017).

International trade and economic aspects are two other subjects mentioned in Table 8 that are also related to infrastructure and LPI. Generally speaking, infrastructure development matters for trade facilitation (Karymshakov & Sulaimanova, 2021). The number, size, and quality of logistics infrastructure/facilities development have a positive impact on exports and imports. (Bensassi et al., 2015; Karymshakov & Sulaimanova, 2021). Infrastructure is also an important factor in social and economic development. (Bezruchonak, 2017; Kunanbayeva et al., 2022; Raimbekov et al., 2016). The literature review revealed that infrastructure has a long causal relationship with LPI, international trade, economic growth, and other related subjects, as shown in Figure 4.

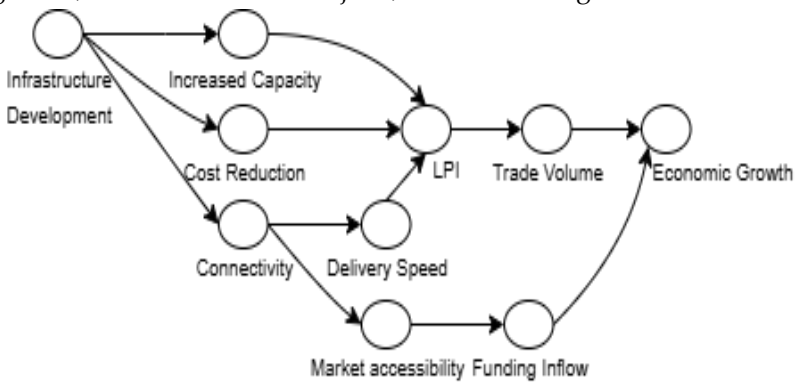

Figure 4. DAG Illustrate the Causality of Infrastructure Development Impact

Enhancing infrastructure quality can significantly improve cost-effectiveness, increase connectivity, and enhance export capacity. (Chciałowski, 2018; Kunanbayeva et al., 2022; Singh & Kathuria, 2016; Zakia et al., 2024). These aspects contribute to improved logistics performance and higher index scores. (Bayoumi et al., 2023; Munim & Schramm, 2018). In terms of cost reduction, a better quality of infrastructure significantly reduces trade costs by 0.46% for emerging economies, 0.25% for developed economies, and 0.71% for both, for every 1% increase. (Amankwah-Amoah et al., 2025). As for LPI as an indicator of development, a higher index value indicates a higher level of exports. At a 1% significance level, a 10% increase in LPI can lead to almost a 94% increase in exports. (Çelebi, 2019; Ding et al., 2023; Kabak et al., 2018; Limcharoen et al., 2017; Pehlivan et al., 2024). Infrastructure also enables access to export markets, which is underscored by improvements in the liner shipping connectivity index. (Zakia et al., 2024). Better yet, the country could attract an inflow of funding through FDI, PPP, and other means. (Ben Haj Ahmed et al., 2023; Dai, 2022; Siddiqui & Vita, 2021; G. Wang & Chen, 2025). Ultimately, contributions from all these aspects promote a country's economic development, as reflected in its GDP and GRP. (Amankwah-Amoah et al., 2025; Bozkurt & Karaköy, 2025; Raimbekov et al., 2016; Sabir et al., 2024; Saini & Hrušecká, 2021; Yeo et al., 2020). This proves that the synergy between infrastructure and LPI not only boosts international trade to a higher level, but also supports better economic welfare for a country. (Xuejiao, 2015). A comprehensive approach that considers various economic dimensions beyond just infrastructure endowment is necessary to foster regional economic development and bridge the logistics divide, particularly in countries where significant imbalances exist between regions. (Carlucci et al., 2017).

Most studies above agree on the positive significance of infrastructure on LPI, although some studies disagree with the urgency of infrastructure, each with its respective reasons. Factors such as the

size of the countries, trade volumes, whether they are coastal or not, transit difficulties, or country policies have an impact on different results. (Mercan & Aydın, 2024). The establishment of infrastructure may prompt new restrictions and regulations, which can lead to increased transaction costs and thereby reduce competitiveness. (Olyanga et al., 2022). Related research also suggests that the adverse impact of infrastructure, particularly maritime infrastructure, can hinder the manufacturing industry by increasing imports of goods from competitor countries. (Harizi, 2023). Other studies have also found that inadequate infrastructure can negatively affect economic growth and exports. (Kareem, 2025; Parianom et al., 2024). Furthermore, infrastructure that is not built to strengthen specific industries will have a negative impact. (Harizi, 2023).

The results also reveal several areas of research focus surrounding these two main topics, which are not included in Table 8, such as business and product-oriented supply chain strategies, environmental technology, global value chain (GVC), specialized goods, upstream and downstream activities, as well as urbanization. (Dağdeviren & Erturgut, 2024; Hayyat et al., 2025; Lanz & Piermartini, 2021; Le, 2022; Ohakwe & Wu, 2025).

Specific Infrastructure Worth Noticing.

Logistics infrastructure, including road, rail, air, and sea transport, plays a critical role in global trade. Among these, maritime transport handles the most significant volume of goods shipped worldwide, accounting for approximately 80% of it. (Sun & Kauzen, 2023)To complement the quality of services and transportation infrastructure in an ever-changing market environment, port efficiency is crucial for enhancing trade activities through efficient customs administration. (Olyanga et al., 2022). A port's proximity to main navigation routes provides a competitive advantage by shortening lead times and reducing transportation costs for shipping lines. (Hlali, 2024; Martínez-Moya et al., 2025). Additionally, Sea routes are considered the most cost-effective way of exchanging exports and imports. (Rahman et al., 2021). Road transport infrastructure is also crucial to consider for the sake of national development, as it facilitates connectivity and accessibility to all supply chain areas within the country. (Bayoumi et al., 2021, 2023). Existing and planned road infrastructure induce the development of local road projects and increase travel demand. (Andani et al., 2019).

Lessons for Improving Indonesia's Logistics Performance and Infrastructure Development.

Indonesia's current and recent position is quite concerning. In the 2023 Logistics Performance Index (LPI), Indonesia dropped 17 places to 63rd out of 139 countries, scoring 3.0, down from 3.15 in 2018 (Ulkhaq & Pratiwi, 2025). One of the reasons Indonesia has poor logistics performance is attributed to its inadequate logistics infrastructure, which leads to high logistics costs. (Setiawan, 2018). Given the inherent market failures and political challenges to institutional reform, passive developmentalist policies were a primary cause of conflictual state–business relations and insufficient public investment. (Kim, 2023). Decades of under-investment and poor asset management have also left the country with a significant infrastructure deficit. (Salim & Negara, 2018). Despite facing quite dire conditions, Indonesia needs to take the necessary steps to address its current infrastructure issues.

Managing infrastructure should be based on the country's condition. Beitelmal et al. (2017) suggest that country conditions can be classified based on external conditions. The study further recommends that countries with improved, but not entirely favorable, external conditions should prioritize building both internal (transparent decision-making processes) and external channels (stakeholder support) as the most impactful strategy. The prioritization of emerging technologies applications for sub-dimensions of infrastructure was also emphasized by experts to improve infrastructure (Bhattacharyya & Patel, 2022). Measuring and monitoring the contribution of transportation infrastructure to logistics value can be based on the integration of data on travel time reliability, disruption risks, and carbon footprint (Cedillo-Campos et al., 2022). Another thing to note is the influence of corruption, which is prevalent in many Asian countries (Koh et al., 2018). Infrastructure has a positive effect, albeit with diminishing returns, on countries with low levels of corruption control

and poor allocation of national funds (Butkus et al., 2023). Good governance is also essential when it comes to managing natural resources for infrastructure development, aiming to achieve economic prosperity (Asongu et al., 2024). Addressing these challenges through strategic investments, anti-corruption measures, and adherence to international standards is essential (Kolodiichuk et al., 2023). Hence, deliberate government policy is needed to consider the impact and costs, as well as facilitating a favorable environment for trade (Karymshakov & Sulaimanova, 2021). A favorable environment for trade needs to be supported by a group of countries that want to advance their trade sectors. For example, countries that exhibit LPI scores, such as Germany and Italy, are surrounded by other high-scoring regions (Pan et al., 2022). It is also underscored by the fact that 21,8% inefficiencies within groups contribute to global inefficiencies in logistics performance (Yu & Hsiao, 2016). The lack of logistics performance will affect the linkage within a group and countries outside the group (Taguchi & Zhao, 2022). Therefore, geographical connectivity is also crucial in facilitating a favorable trade environment.

Conclusion

This study yielded 82 related articles that were published between 2015 and 2025, primarily to address the three scientific questions outlined in the methodology section. The study examined trends in infrastructure development and LPI assessment, as well as the annual publication volume. Various studies compiled show a significant relationship between infrastructure and LPI. It was described through the causal effect of infrastructure development on economic growth, facilitated by international trade. Sea routes remain the most cost-effective for trade, which makes maritime transport infrastructure (port) vital for global trade. Several key areas that Indonesia needs to focus on to improve its infrastructure include governance, technology adoption, and connectivity.

The contribution of knowledge in infrastructure and LPI is consequential, providing a comprehensive understanding of the relationship between the two subjects. It expands our understanding of the fundamental principles by which infrastructure can affect a country's conditions and how countries are assessed based on the LPI. Furthermore, the findings support the efforts of nations worldwide to advance their logistics sectors, providing policymakers with actionable steps to take.

This study still has several limitations. The scope of the study is considered too narrow to cover several areas that are still related to infrastructure and LPI. As a preliminary study, the research was limited by the discussion's capabilities, which could only cover the basics. Despite the limited depth of the research, this study makes it easy for readers to grasp the subject matter. The findings of this study should be accompanied by further research to uncover details that may not have been revealed in this study. It is essential to examine other topics related to this study, including government, corruption, macroeconomic indicators, and the five other LPI indicators that may be linked to infrastructure.

References

Adl-Zarrabi, B. (2017). What is “Infrastructure Physics”? Energy Procedia, 132, 520–524. https://doi.org/10.1016/j.egypro.2017.09.707

Amankwah-Amoah, J., Bai, Y., Liu, L., Wang, S., & Zhang, H. (2025). Bridging the gap: how transport infrastructure reduces bilateral trade costs to fuel GDP growth. Journal of Chinese Economic and Business Studies, 23(2), 295–320. https://doi.org/10.1080/14765284.2025.2472502

Andani, I. G. A., Puello, L., & Geurs, K. (2019). Effects of Toll Road Construction on Local Road Projects in Indonesia. Journal of Transport and Land Use, 12. https://doi.org/10.5198/jtlu.2019.1258

Arshed, N., Hassan, M. S., Khan, M. U., & Uppal, A. A. (2022). Moderating Effects of Logistics Infrastructure Development and Real Sector Productivity: A Case of Pakistan. Global Business Review, 23(3), 676–693. https://doi.org/10.1177/0972150919879307

Arvis, J.-F. (2023). The Logistics Performance Index 2023 Overview of methodology and main results.

Asongu, S. A., Diop, S., Emeka, E. T. G., & Ogbonna, A. O. (2024). The role of governance and infrastructure in moderating the effect of resource rents on economic growth. Politics and Policy, 52(5), 1059–1080. https://doi.org/10.1111/polp.12623

Aydas, O. T., Ross, A. D., & Parker, H. (2020). Exploring country-level logistics infrastructure, market potential, trade exports amongst developed and emerging markets. Journal of Transport and Supply Chain Management, 14, 1–11. https://doi.org/10.4102/jtscm.v14i0.487

Barata, F. A. (2020). High Cost of Logistics and Solutions. Proceedings of the 17 Th International Symposium on Management (INSYMA 2020), 407–410. https://doi.org/10.2991/aebmr.k.200127.083

Bayoumi, E., El Gazzar, S., & Abdelbary, A. (2023). Structural equation model to assess the relationship between national road transport infrastructure investments and a country's logistics performance: A study on Egypt. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.4385809

Bayoumi, E. O., Elgazzar, S., Abdel Bary, A., & Ricci, S. (2021). The Role of Road Transport Infrastructure Investments on Logistics Performance: A Research Agenda. International Business Logistics, 1(2), 16. https://doi.org/10.21622/ibl.2021.01.2.016

Beitelmal, W. H., Molenaar, K. R., Javernick-Will, A., & Smadi, O. (2017). Strategies to Enhance Implementation of Infrastructure Asset Management in Developing Countries. Transportation Research Record, 2646(1), 39–48. https://doi.org/10.3141/2646-05

Ben Haj Ahmed, R., Bouzir, A., Benhadj Mbarek, M. H., & Benammou, S. (2023). The Impact Of Logistics Performance Index On Port Infrastructure Quality: Comparative Study Tunisia Morocco. Archives of Transport, 67(3), 71–89. https://doi.org/10.5604/01.3001.0053.7212

Bensassi, S., Márquez-Ramos, L., Martínez-Zarzoso, I., & Suárez-Burguet, C. (2015). Relationship between logistics infrastructure and trade: Evidence from Spanish regional exports. Transportation Research Part A: Policy and Practice, 72, 47–61. https://doi.org/10.1016/j.tra.2014.11.007

Bezruchonak, A. (2017). Geographic structure of road transportation and logistics infrastructure in the Republic of Belarus. Prace Komisji Geografii Komunikacji PTG, 20(2). https://doi.org/10.4467/2543859xpkg.17.007.7389

Bhattacharyya, S., & Patel, S. (2022). Exploratory Study Explicating Value Addition of Emerging Technologies in the Infrastructure Component of Logistics Performance Index (LPI): A Study of the Indian Context. International Journal of Applied Logistics, 12, 1–16. https://doi.org/10.4018/IJAL.286165

Bozkurt, T., & Karaköy, Ç. (2025). ISPEC The Interaction Between Foreign Trade and the Logistics Performance Index in BRICS Countries. ISPEC, 9(1), 33–41. https://doi.org/10.5281/zenodo.15188968

Bugarčić, F., Skvarciany, V., & Stanišić, N. (2020). Logistics performance index in international trade: case of Central and Eastern European and Western Balkans countries. Business: Theory and Practice, 21(2), 452–459. https://doi.org/10.3846/btp.2020.12802

Butkus, M., Mačiulytė-Šniukienė, A., & Matuzevičiūtė, K. (2023). Transport Infrastructure Investments as a Factor of Economic Growth of European Union Countries. TalTech Journal of European Studies, 13(1), 150–176. https://doi.org/10.2478/bjes-2023-0008

Çakır, S. (2017). Measuring logistics performance of OECD countries via fuzzy linear regression. Journal of Multi-Criteria Decision Analysis, 24(3–4), 177–186. https://doi.org/10.1002/mcda.1601

Carlucci, F., Cirà, A., Forte, E., & Siviero, L. (2017). Infrastructure and logistics divide: regional comparisons between North Eastern & Southern Italy. Technological and Economic Development of Economy, 23(2), 243–269. https://doi.org/10.3846/20294913.2015.1070768

Cedillo-Campos, M. G., Piña-Barcenas, J., Pérez-González, C. M., & Mora-Vargas, J. (2022). How to measure and monitor the transportation infrastructure contribution to logistics value of supply chains? Transport Policy, 120, 120–129. https://doi.org/10.1016/j.tranpol.2022.03.001

Çelebi, D. (2019). The role of logistics performance in promoting trade. Maritime Economics and Logistics, 21(3), 307–323. https://doi.org/10.1057/s41278-017-0094-4

Çemberci, M., Civelek, M. E., & Canbolat, N. (2015). The Moderator Effect of Global Competitiveness Index on Dimensions of Logistics Performance Index. Procedia - Social and Behavioral Sciences, 195, 1514–1524. https://doi.org/10.1016/j.sbspro.2015.06.453

Chan, M., Jin, H., van Kan, D., & Vrcelj, Z. (2022). Developing an innovative assessment framework for sustainable infrastructure development. Journal of Cleaner Production, 368, 133185. https://doi.org/https://doi.org/10.1016/j.jclepro.2022.133185

Chciałowski, M. (2018). The Importance Of Transport Infrastructure Investments In Regional Development Of The Norte Region In Portugal And The Masovian Voivodship In Poland. Acta Scientiarum Polonorum. Oeconomia, 17(4), 23–29. https://doi.org/10.22630/aspe.2018.17.4.48

Coşkun, H. İ., & Civelek, M. E. (2020). Effects Of The Sub-Dimensions Of Logistics Performance Index On Foreign Trade Coverage Ratio. In Journal of International Trade, Logistics and Law (Vol. 6, Issue 2).

Dağdeviren, I. E., & Erturgut, R. (2024). The Mediating Role of Supply Chain Integration in the Relationship Between Supply Chain Strategy and Logistics Performance. Sustainability (Switzerland), 16(21). https://doi.org/10.3390/su16219514

Dai, Y. (2022). China's Infrastructure Investment to the Belt and Road: The Case of the China-Indochina Peninsula Economic Corridor. Chinese Economy, 55(3), 169–187. https://doi.org/10.1080/10971475.2021.1958452

Ding, T., Zhu, W., & Zhao, M. (2023). Does Cross-Border Logistics Performance Contribute to Export Competitiveness? Evidence from China Based on the Iceberg Transport Cost Model. Sustainability (Switzerland), 15(1). https://doi.org/10.3390/su15010490

El-Anis, I. (2021). Transport Infrastructure and Regional Integration in the Middle East. The Muslim World, 111(1), 27–53. https://doi.org/https://doi.org/10.1111/muwo.12371

Erturgut, R., Coşkun, A. E., & Özer Alpar, M. (2018). City Logistics And Logistics Performance: A Comparison Of Successful Countries In Logistic Performance Index. https://www.researchgate.net/publication/325746512

Fiedler, J., & Wendler, A. (2016). Berlin Brandenburg Airport. In G. Kostka & J. Fiedler (Eds.), Large Infrastructure Projects in Germany: Between Ambition and Realities (pp. 87–145). Springer International Publishing. https://doi.org/10.1007/978-3-319-29233-5_4

Frandsen, T. F., Bruun Nielsen, M. F., Lindhardt, C. L., & Eriksen, M. B. (2020). Using the full PICO model as a search tool for systematic reviews resulted in lower recall for some PICO elements. Journal of Clinical Epidemiology, 127, 69–75. https://doi.org/https://doi.org/10.1016/j.jclinepi.2020.07.005

Gani, A. (2017). The Logistics Performance Effect in International Trade. Asian Journal of Shipping and Logistics, 33(4), 279–288. https://doi.org/10.1016/j.ajsl.2017.12.012

Göçer, A., Özpeynirci, Ö., & Semiz, M. (2022). Logistics performance index-driven policy development: An application to Turkey. Transport Policy, 124, 20–32. https://doi.org/10.1016/j.tranpol.2021.03.007

Gurara, D., Klyuev, V., Mwase, N., & Presbitero, A. F. (2018). Trends and Challenges in Infrastructure Investment in Developing Countries. Revue Internationale de Politique de Développement, 10. https://doi.org/10.4000/poldev.2802

Harizi, R. (2023). Maritime infrastructure and growth: econometric measurement using panel data from Tunisia. Journal of Shipping and Trade, 8(1). https://doi.org/10.1186/s41072-022-00130-9

Hayyat, U., Qian, L., Saeed, M., & Nawaz, W. (2025). Modeling the Growth Dynamics of Logistics Performance: Industrialization, Environmental Technology, and Economic Transformation in Manufacturing Economies. Systems, 13(5). https://doi.org/10.3390/systems13050375

Hlali, A. (2024). Impact of logistics and economic structure on seaport infrastructure: a case of Mediterranean countries. Australian Journal of Maritime and Ocean Affairs, 16(2), 175–185. https://doi.org/10.1080/18366503.2023.2217584

Holmgren, J., & Merkel, A. (2017). Much ado about nothing? – A meta-analysis of the relationship between infrastructure and economic growth. Research in Transportation Economics, 63, 13–26. https://doi.org/10.1016/j.retrec.2017.05.001

Iskandar, T., & Arifin, R. (2023). Navigating Indonesia's Logistics And Supply Chain Challenges: A Data-Driven Analysis Of Logistics Performance Index. Jurnal BPPK: Badan Pendidikan Dan Pelatihan Keuangan, 16(1), 110–123. https://doi.org/10.48108/jurnalbppk.v16i1.820

Ivut, R. B., Popov, P. V, Lapkovskaya, P. I., & Prokopov, S. V. (2023). Theoretical and methodological substantiation of the assessment and development of logistics infrastructure. Science & Technique, 23(1), 69–78. https://doi.org/10.21122/2227-1031-2023-23-1-69-78

Jayathilaka, R., Jayawardhana, C., Embogama, N., Jayasooriya, S., Karunarathna, N., Gamage, T., & Kuruppu, N. (2022). Gross domestic product and logistics performance index drive the world trade: A study based on all continents. PLoS ONE, 17(3 March). https://doi.org/10.1371/journal.pone.0264474

Jonasíková, D., Konečný, V., & Zuzaniak, M. (2025). Evolution of logistics performance index and their structure in selected countries. Transportation Research Procedia, 87, 217–231. https://doi.org/10.1016/j.trpro.2025.04.125

Kabak, Ö., Önsel Ekici, Ş., & Ülengin, F. (2020). Analyzing two-way interaction between the competitiveness and logistics performance of countries. Transport Policy, 98, 238–246. https://doi.org/10.1016/j.tranpol.2019.10.007

Kabak, Ö., Ülengin, F., & Önsel Ekici, Ş. (2018). Connecting logistics performance to export: A scenario-based approach. Research in Transportation Economics, 70, 69–82. https://doi.org/10.1016/j.retrec.2018.05.007

Kareem, O. I. (2025). The effects of export-facilitating quality infrastructure on Africa's exports. Journal of Trade Science, 13(1), 65–84. https://doi.org/10.1108/jts-04-2024-0024

Karymshakov, K., & Sulaimanova, B. (2021). The impact of infrastructure on trade in Central Asia. Asia Europe Journal, 19, 5–20. https://doi.org/10.1007/s10308-021-00613-7

Khadim, Z., Batool, I., Akbar, A., Poulova, P., & Akbar, M. (2021). Mapping the moderating role of logistics performance of logistics infrastructure on economic growth in developing countries. Economies, 9(4). https://doi.org/10.3390/economies9040177

Kim, K. (2023). Analysing Indonesia's infrastructure deficits from a developmentalist perspective. Competition and Change, 27(1), 115–142. https://doi.org/10.1177/10245294211043355

Knox, H., Gambino, E., & Stein, F. (2023). Infrastructure. Open Encyclopedia of Anthropology. https://doi.org/10.29164/23infrastructure

Koh, B. H., Wong, W. P., Tang, C. F., & Lim, M. K. (2018). The double-edge resource-based view of logistics performance and governance in Asian countries. Asia Pacific Journal of Marketing and Logistics, 30(3), 652–668. https://doi.org/10.1108/APJML-07-2017-0135

Kolodiichuk, V., Cherevko, H., & Popivniak, R. (2023). Quality Assessment of Transit Potential of the Transport–Logistics System of Ukraine. Global Business Review, 24(1), 171–184. https://doi.org/10.1177/0972150920907008

Koyuncu, T., Doğaner, B., & Alola, A. A. (2023). The criticality of transport and export activities in the economic prosperity of high-middle income countries: the role of logistics performance. Urban, Planning and Transport Research, 11(1). https://doi.org/10.1080/21650020.2023.2182353

Kunanbayeva, D., Izteleuova, Z., Izteleuova, M., & Mias, A. (2022). Public Administration Of The Transport And Logistics Sector In Kazakhstan Based On The Data From The Global Logistics Performance Index. Public Policy and Administration, 21(5), 703–714. https://doi.org/10.13165/VPA-22-21-5-15

Lanz, R., & Piermartini, R. (2021). Specialisation within global value chains: Transport infrastructure matter upstream. World Economy, 44(8), 2410–2432. https://doi.org/10.1111/twec.13106

Le, D. N. (2022). Export, Logistics Performance, and Regional Economic Integration: Sectoral and Sub-Sectoral Evidence from Vietnam. Journal of International Logistics and Trade, 20(1), 37–56. https://doi.org/10.24006/jilt.2022.20.1.037

Limcharoen, A., Jangkrajarng, V., Wisittipanich, W., & Ramingwong, S. (2017). Thailand Logistics Trend: Logistics Performance Index. In International Journal of Applied Engineering Research (Vol. 12). http://www.ripublication.com

Liu, X. (2024). The Role of Logistics and Infrastructure in Promoting International Trade. Journal of Education and Educational Research, 9, 281–286. https://doi.org/10.54097/j25ch550

Ma'rifah, A. (2022). The Effect of Infrastructure Development on Economic Growth. Efficient: Indonesian Journal of Development Economics, 5(3), 230–241. https://doi.org/10.15294/efficient.v5i3.54394

Martínez-Moya, J., Vanelslander, T., Feo-Valero, M., & Debón, A. (2025). Transhipment port competitiveness assessment: the importance of port location. WMU Journal of Maritime Affairs, 24(2), 179–199. https://doi.org/10.1007/s13437-025-00372-x

Maryani, D., & Abidin, Z. (2022). Jakarta-Bandung High-Speed Train Infrastructure Development. Jurnal Ilmiah Administrasi Pemerintahan Daerah, 14(1), 162–179.

Mercan, Y., & Aydın, H. (2024). Logistics Performance Index of Africa: An Indicator for Türkiye and Africa Trade Relations? Süleyman Demirel Üniversitesi Vizyoner Dergisi, 15(42), 553–569. https://doi.org/10.21076/vizyoner.1409760

Mešić, A., Miškić, S., Stević, Z., & Mastilo, Z. (2022). Hybrid MCDM Solutions for Evaluation of the Logistics Performance Index of the Western Balkan Countries. ECONOMICS - Innovative and Economics Research Journal, 10(1), 13–34. https://doi.org/10.2478/eoik-2022-0004

Mujiya Ulkhaq, M., & Nagris Pratiwi, T. (2025). Analysis of Indonesia's Position in the 2023 Logistics Performance Index. Science and Education, 4, 581–587.

Munim, Z. H., & Schramm, H.-J. (2018). The impacts of port infrastructure and logistics performance on economic growth: the mediating role of seaborne trade. Journal of Shipping and Trade, 3(1). https://doi.org/10.1186/s41072-018-0027-0

Ohakwe, C. R., & Wu, J. (2025). The impact of macroeconomic indicators on logistics performance: A comparative analysis using simulated scenarios. Sustainable Futures, 9. https://doi.org/10.1016/j.sftr.2025.100567

Olyanga, A. M., Shinyekwa, I. M. B., Ngoma, M., Nkote, I. N., Esemu, T., & Kamya, M. (2022). Export logistics infrastructure and export competitiveness in the East African Community. Modern Supply Chain Research and Applications, 4(1), 39–61. https://doi.org/10.1108/mscra-09-2021-0017

Özceylan, E., Çetinkaya, C., Erbaş, M., & Kabak, M. (2016). Logistic performance evaluation of provinces in Turkey: A GIS-based multi-criteria decision analysis. Transportation Research Part A: Policy and Practice, 94, 323–337. https://doi.org/10.1016/j.tra.2016.09.020

Pan, W. T., Jiang, B., Wang, Y., Cai, Y., & Ji, X. (2022). Comparison and Suggestions of Logistics Performance Index of Main Countries of Belt and Road Strategy Based on Bootstrap DEA Model. Computational Intelligence and Neuroscience, 2022. https://doi.org/10.1155/2022/2159578

Parianom, R., . D., & Utami, K. (2024). An Examination of the Logistics Infrastructure's Impact on the Economic Growth of ASEAN. KnE Social Sciences. https://doi.org/10.18502/kss.v9i20.16470

Park, S. (2020). Quality of transport infrastructure and logistics as source of comparative advantage. Transport Policy, 99, 54–62. https://doi.org/10.1016/j.tranpol.2020.07.016

Pehlivan, P., Aslan, A. I., David, S., & Bacalum, S. (2024). Determination of Logistics Performance of G20 Countries Using Quantitative Decision-Making Techniques. Sustainability (Switzerland) , 16(5). https://doi.org/10.3390/su16051852

Putra, N. E. (2020). LM FEB UI Umumkan Daya Saing Indonesia 2020. FEB UI.

Rahman, I. U., Shafi, M., Junrong, L., Fetuu, E. T. M. K., Fahad, S., & Sharma, B. P. (2021). Infrastructure and Trade: An Empirical Study Based on China and Selected Asian Economies. SAGE Open, 11(3). https://doi.org/10.1177/21582440211036082

Rahmanov, F., Lala Neymatova, L. N., Aliyeva, R., & Hashimova, A. (2022). Management of the Transport Infrastructure of Global Logistics: Cross-Country Analysis. Marketing and Management of Innovations, 13(4), 65–75. https://doi.org/10.21272/mmi.2022.4-07

Raimbekov, Z., Baimbetova, A., Syzdykbayeva, B., & Rakhmetulina, Z. (2016). Evaluating the impact of logistics infrastructure on the functioning and development of regional economy. Economic Annals-XXI, 160(7–8), 100–104. https://doi.org/10.21003/ea.V160-20

Ray, D., & Ing, L. Y. (2016). Addressing Indonesia's Infrastructure Deficit. Bulletin of Indonesian Economic Studies, 52(1), 1–25. https://doi.org/10.1080/00074918.2016.1162266

Rezaei, J., van Roekel, W. S., & Tavasszy, L. (2018). Measuring the relative importance of the logistics performance index indicators using Best Worst Method. Transport Policy, 68, 158–169. https://doi.org/10.1016/j.tranpol.2018.05.007

Sabir, M., Akram, M., & Mian, R. U. (2024). Transport, Logistics, And Economic Growth Nexus: A Cross-Country Analysis. Transport and Telecommunication, 25(4), 462–472. https://doi.org/10.2478/ttj-2024-0033

Saini, M., & Hrušecká, D. (2021). Comparative impact of logistics performance index, ease of doing business and logistics cost on economic development: A fuzzy qca analysis. Journal of Business Economics and Management, 22(6), 1577–1592. https://doi.org/10.3846/jbem.2021.15586

Salim, W., & Negara, S. D. (2018). Infrastructure Development under the Jokowi Administration: Progress, Challenges and Policies. https://doi.org/10.2307/26545320

Seidu, R. D., Young, B. E., Robinson, H., & Ryan, M. (2020). The impact of infrastructure investment on economic growth in the United Kingdom. Journal of Infrastructure, Policy and Development, 4(2), 217. https://doi.org/10.24294/jipd.v4i2.1206

Sénquiz-Díaz, C. (2021). Transport Infrastructure Quality and Logistics Performance in Exports. ECONOMICS - Innovative and Economics Research Journal, 9(1), 107–124. https://doi.org/10.2478/eoik-2021-0008

Sergi, B. S., D'Aleo, V., Konecka, S., Szopik-Depczyńska, K., Dembińska, I., & Ioppolo, G. (2021). Competitiveness and the Logistics Performance Index: The ANOVA method application for Africa, Asia, and the EU regions. Sustainable Cities and Society, 69. https://doi.org/10.1016/j.scs.2021.102845

Setiawan, L. (2023). Indeks Kinerja Logistik Indonesia 2023: Kinerja Kepabeanan Meningkat, Infrastruktur Terjaga, Layanan Distribusi Masih Tersendat. Kementrian Keuangan. https://anggaran.kemenkeu.go.id/in/post/indeks-kinerja-logistik-indonesia-2023:-kinerja-kepabeanan-meningkat,-infrastruktur-terjaga,-layanan-distribusi-masih-tersendat-

Setiawan, S. (2018). Indonesian Logistics Infrastructure: The Performance and Fiscal Support. International Journal of Finance & Banking Studies (2147-4486), 7(2), 9–18. https://doi.org/10.20525/ijfbs.v7i2.896

Sharapiyeva, M. D., Antoni, A., & Yessenzhigitova, R. (2019). The impact of port transport-logistics infrastructure and lpi for economic growth: On the example of landlocked countries. Pomorstvo, 33(1), 63–75. https://doi.org/10.31217/p.33.1.7

Siddiqui, A. A., & Vita, S. (2021). Impact of Logistics Performance on Trade with Specific Reference to Garment Sector in Cambodia, Bangladesh and India. Global Business Review, 22(2), 517–531. https://doi.org/10.1177/0972150918811700

Singh, P., & Kathuria, R. (2016). Infrastructure and Connectivity in India: Getting the Basics Right. Asian Economic Policy Review, 11(2), 266–285. https://doi.org/https://doi.org/10.1111/aepr.12144

Song, M. J., & Lee, H. Y. (2022). The relationship between international trade and logistics performance: A focus on the South Korean industrial sector. Research in Transportation Business and Management, 44. https://doi.org/10.1016/j.rtbm.2022.100786

Suki, N. M., Suki, N. M., Sharif, A., & Afshan, S. (2021). The role of logistics performance for sustainable development in top Asian countries: Evidence from advance panel estimations. Sustainable Development, 29(4), 595–606. https://doi.org/10.1002/sd.2160

Sulistyowati, D., & Wibowo, P. (2022). Infrastructure Spending in the Characteristics of the Regions: Towards the Achievement of Sustainable Development Goals. The Indonesian Journal of Accounting Research, 25(03). https://doi.org/10.33312/ijar.622

Sun, B., & Kauzen, R. (2023). The Impact of Port Infrastructure and Economic Growth in Tanzania: Adopting a Structural Equation Modeling Approach. SAGE Open, 13(1). https://doi.org/10.1177/21582440221145894

Suroso, A. I. (2022). The Effect of Logistics Performance Index Indicators on Palm Oil and Palm-Based Products Export: The Case of Indonesia and Malaysia. Economies, 10(10). https://doi.org/10.3390/economies10100261

Taguchi, H., & Zhao, J. (2022). China's global value chain linkage and logistics performances in emerging ASEAN economies.

Tang, C. F., & Abosedra, S. (2019). Logistics performance, exports, and growth: Evidence from Asian economies. Research in Transportation Economics, 78. https://doi.org/10.1016/j.retrec.2019.100743

Triantoro, W. (2020). Comparative Cost Analysis of Domestic Container Shipping Network: A Case Study of Indonesian Sea-Toll Concept. Jurnal Penelitian Transportasi Laut, 22(1), 33–46. https://doi.org/10.25104/transla.v22i1.1535

Ulkhaq, M. M. (2023). Clustering countries according to the logistics performance index. JATISI (Jurnal Teknik Informatika Dan Sistem Informasi), 10(1). https://doi.org/10.35957/jatisi.v10i1.4755

Ulutaş, A., & Karaköy, Ç. (2019). An analysis of the logistics performance index of EU countries with an integrated MCDM model. Economics and Business Review, 5(4), 49–69. https://doi.org/10.18559/ebr.2019.4.3

Wang, G., & Chen, M. (2025). Performance Evaluation and Strategic Analysis of Logistics Development for China Railway Express: A Spatial Connectivity Perspective. Systems, 13(3). https://doi.org/10.3390/systems13030166

Wang, W., Wu, Q., Su, J., & li, B. (2024). The impact of international logistics performance on import and export trade: an empirical case of the "Belt and Road" initiative countries. Humanities and Social Sciences Communications, 11(1). https://doi.org/10.1057/s41599-024-03541-0

Xuejiao, W. (2015). Analysis of the linkage effect between Regional Economic development and logistics competitiveness in China. Acta Oeconomica, 65, 239–249. https://doi.org/10.1556/032.65.2015.S2.18

Yeo, A. D., Deng, A., & Nadiedjoa, T. Y. (2020). The Effect of Infrastructure and Logistics Performance on Economic Performance: The Mediation Role of International Trade. Foreign Trade Review, 55(4), 450–465. https://doi.org/10.1177/0015732520947676

Yifan, X. (2024). Comparison of Logistics Level Between China and ASEAN. Journal of Economics and Management Sciences, 7(3), p64. https://doi.org/10.30560/jems.v7n3p64

YILDIZ, K., & TABAK, Ç. (2019). LPI Based Comparison of Turkey And Mexican Logistics Sector. Politeknik Dergisi, 22(4), 1061–1067. https://doi.org/10.2339/politeknik.479410

Yu, M. M., & Hsiao, B. (2016). Measuring the technology gap and logistics performance of individual countries by using a meta-DEA–AR model. Maritime Policy and Management, 43(1), 98–120. https://doi.org/10.1080/03088839.2015.1037372

Zakia, M., Hanene, B., Samir, A., & Soumeia, D. (2024). The Impact of Logistics Performance on Export Market Penetration: an Econometric Study Using GMM. Financial Markets, Institutions and Risks, 8(4), 51–63. https://doi.org/10.61093/fmir.8(4).51-63.2024