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Analysis of Indonesia's Position in the 2023 Logistics Performance Index

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Abstract: The Logistics Performance Index (LPI) is an indicator for measuring the performance of the logistics sector, developed by the World Bank since 2007 and widely accepted globally. The LPI is based on surveys conducted with logistics professionals about their perceptions of a country's logistics performance. There are six indicators in the LPI: customs, infrastructure, international shipments, logistics quality, tracking and tracing, and timeliness. The LPI score is derived from these six indicators using principal component analysis. This study explains the LPI and Indonesia's position in the latest 2023 LPI. In the 2023 Logistics Performance Index (LPI), Indonesia dropped 17 spots to rank 63rd out of 139 countries. This represents a decline from its 2018 position at 46th, with a decrease in score from 3.15 to 3.0. The areas where Indonesia faced the most significant performance drops were in "Timeliness" and "Tracking & Tracing," both crucial for efficient logistics operations. Indonesia's fall contrasts with several ASEAN neighbors that made improvements, such as the Philippines (which climbed 13 places to rank 43), Malaysia (up to 31), and Singapore, which advanced to the top of the global ranking. Analysts highlight that Indonesia's logistics issues stem from regulatory inefficiencies, infrastructure gaps, and operational delays. Improvements are needed in areas such as infrastructure development, logistics management, and better integration with global supply chains. Efforts to address these challenges, including the implementation of the National Logistics Ecosystem (NLE), aim to simplify logistics processes and enhance the country's performance in future LPI rankings. In addition, experts suggest that improving regulatory frameworks, upgrading infrastructure, and streamlining operational processes could help Indonesia enhance its logistics performance in the future. There is also ongoing discussion about the need for better coordination and investment in logistics technology.

Keywords: Indonesia; logistics; logistics performance index; LPI; supply chain.

Introduction

Logistics is a vital component of global trade, influencing not only supply chain efficiency but also the economic competitiveness of nations (Martí et al., 2014). As global markets become more interconnected, the ability of countries to manage logistics effectively has a direct impact on trade volumes and economic growth (Hausman et al., 2013). As a result, this creates a need for developing specific measurement systems for logistics performance and strategies to improve a country's performance. Recognizing this, the World Bank developed the Logistics Performance Index (LPI) in 2007 to provide a standardized method for evaluating logistics performance across countries.

LPI is a powerful tool for countries to compare and assess their logistics performance on a global platform, helping them understand logistics challenges and areas for improvement (Gogoneata, 2008; Ulkhaq, 2023a, 2023b, 2024). It assists countries in understanding their current position and developing strategies and policies to enhance their performance in global trade. The LPI has become a widely accepted tool used by both policymakers and international organizations to measure logistics performance and implement

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reforms. Countries with high LPI scores typically enjoy greater trade facilitation and stronger integration into global supply chains. For example, the European Commission has used LPI in its Transport Evaluation Panel and in evaluating the performance of the Customs Union (das Chagas et al., 2008). Various international transportation associations support the World Bank in preparing and conducting the LPI survei (Çemberci et al., 2015). Therefore, it is recognized that improving a country's LPI score correlates with greater trade volume in the global market (Martí et al., 2014; Hausman et al., 2013; Çemberci et al., 2015; Ekici et al., 2016).

In Indonesia, the LPI has been formally adopted to measure logistics performance, especially within government ministries like the Ministry of Trade, and is also used by the Asia-Pacific Economic Cooperation (APEC) to evaluate the effectiveness of regional initiatives aimed at improving supply chain connectivity (Göçer et al., 2022). Despite its use in policy and operational contexts, research exploring the LPI within the Indonesian context remains limited, with only a handful of academic articles addressing its implications for Indonesia's logistics sector. A search for articles in the Scopus database using keywords "Indonesia" and "logistics performance indicator" or LPI (excluding proceedings and books) revealed only three articles discussing LPI and its relationship with the logistics sector in Indonesia. This indicates that research in this area has not been thoroughly explored.

Given Indonesia's significant logistical challenges and its critical role in Southeast Asia's economy, this paper seeks to analyze Indonesia's position in the 2023 LPI, focusing on the factors behind its current standing. It will also compare Indonesia's performance with that of other ASEAN countries, providing insights into how Indonesia can enhance its logistics competitiveness. By analyzing the country's logistics landscape, this study aims to highlight key areas for improvement and offer practical recommendations for policy-makers and industry leaders. Additionally, it underscores the importance of bridging the gap between practical and theoretical applications of the LPI, particularly in Indonesia, where more research is needed to fully understand the logistics dynamics and inform future improvements.

Materials and Methods

Logistics

According to the Council of Logistics Management[1], logistics is a part of the process within the supply chain that involves the planning, implementation, and efficient and effective control of the flow and storage of goods, services, and related information from the point of origin to the point of consumption with the aim of meeting customer requirements. Meanwhile, based on Presidential Regulation No. 26 of 2012 concerning the Blueprint for the Development of the National Logistics System (Sislognas), logistics is defined as part of the supply chain that handles the flow of goods, information, and funds through the processes of procurement, storage, transportation, distribution, and delivery services according to the type, quality, quantity, time, and place desired by consumers, safely, effectively, and efficiently, from the point of origin to the destination.

There are various activities in logistics, including demand forecasting, purchasing, requirements planning, production planning, manufacturing inventory, warehousing, material handling, packaging, finished goods inventory, distribution planning, order processing, transportation, and customer service. Meanwhile, the activities within supply chain management include logistics, along with strategic planning, information services, marketing/sales, and finance (see Figure 1).

[1] The Council of Logistics Management, now known as the Council of Supply Chain Management Professionals (CSCMP), is a professional organization consisting of logistics practitioners and academics. It was established in 1963 with the goal of advancing the logistics and supply chain management profession through education, research, and networking. The name change from the Council of Logistics Management to CSCMP in 2005 reflects the organization's broadened focus to include the entire supply chain, beyond just logistics.

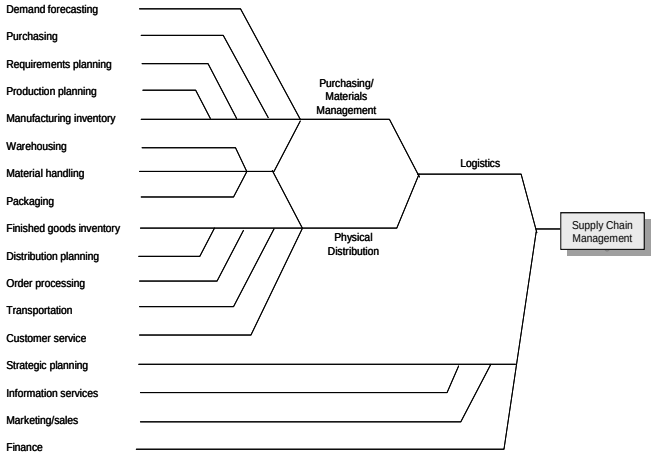

Figure 1. Activities in logistics and supply chain management (from: Ballou, 2004).

Basically, activities within logistics involve many stakeholders that can be categorized as follows:

1. Consumers are the users of logistics who require goods for both production processes and consumption.
2. Suppliers are parties that supply or sell raw materials or semi-finished goods to others (usually manufacturers) so they can be produced into finished goods.
3. Logistics Operators are the owners and providers of goods needed by consumers, consisting of producers (who act as producers of goods) and distributors (intermediaries) who act as intermediaries in transferring ownership of goods from producers to consumers through distribution channels (wholesalers, distributors, agents, markets, retailers, small shops) within a trade mechanism.
4. Logistics Service Providers are institutions that provide shipping services (transporters, freight forwarders, shipping liners) from the origin of the goods (shipper) to their destination (consignee), as well as storage services (warehousing, fumigation, etc.).
5. Logistics Support Activities are institutions that provide support for the effectiveness and efficiency of logistics activities and contribute to resolving logistics issues. This category includes associations, consultants, educational and training institutions, and research agencies.
6. The Government functions as: (i) a regulator that prepares legislation and policies, (ii) a facilitator that provides and builds the necessary logistics infrastructure for the execution of logistics processes, and (iii) an integrator that coordinates and synchronizes logistics activities according to the desired vision, empowering both logistics operators and service providers, as well as logistics supporters.

Logistics Performance Index

LPI (Logistics Performance Index) is one of the indicators that assesses the logistics performance of a country, released by the World Bank. The LPI is based on a survey conducted among logistics professionals in the surveyed countries regarding their perceptions of the logistics performance of their respective countries. There are six indicators in the LPI, namely:

1. Customs: Efficiency of customs and border management permits.
2. Infrastructure: Quality of infrastructure related to trade and transportation.
3. International shipments: Ease of arranging shipments with competitive pricing.
4. Logistics quality: Competence and quality of logistics services.
5. Tracking and tracing: Ability to track and trace shipments.
6. Timeliness: Frequency of shipments that can reach recipients within the scheduled or expected time.

The six LPI indicators are divided into two main categories: (i) the regulatory policy area, which includes the inputs (customs, infrastructure, and logistics quality) of the supply chain, and (ii) the output of supply chain performance, which includes (timeliness, international shipments, and tracking and tracing), see Figure 3.

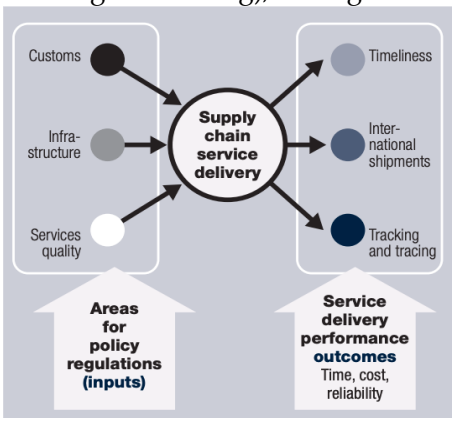

Figure 2. Input and output in LPI (from: Arvis et al., 2018).

The LPI value is constructed from these six indicators using principal component analysis (PCA). The scores are normalized by subtracting the sample mean and dividing by the standard deviation before performing PCA. The result of the PCA is a single indicator, which is the weighted average of the six indicators. The weights are selected to maximize the percentage of variation within the six LPI indicators. In the 2018 edition of the LPI, the weights for the six indicators were as follows: customs = 0.40; infrastructure = 0.42; international shipments = 0.40; logistics quality = 0.42; tracking and tracing = 0.41; timeliness = 0.40 (Arvis et al., 2018).

The LPI scores are divided into four categories based on quintile measures:

1. Logistics-unfriendly: This category includes countries with severe logistics issues, such as less developed countries (quintile five).
2. Partial performers: This includes countries with logistics problems most commonly seen in low- and middle-income countries (quintiles three and four).
3. Consistent performers: This includes countries rated better in logistics performance than most other countries in their income group (quintile two).

Logistics-friendly: This includes countries with the best performance, mostly found in the high-income group (quintile one).

Results and Discussion

Indonesia's Position in the 2023 LPI

In the 2023 edition of the Logistics Performance Index (LPI), Indonesia experienced a significant decline, falling 17 places from its 2018 position. Indonesia is now ranked 63rd out of 139 countries, with an overall score of 3.0, down from 3.15 in 2018. This marks the lowest position Indonesia has held since the LPI's inception in 2007. In the 2018 LPI edition, Indonesia ranked 46th with an overall LPI score of 3.15. This was Indonesia's best score in all LPI editions. This position improved from the 2016 LPI edition, where Indonesia had an overall LPI score of 2.98 and ranked 63rd. In the 2014 LPI edition, Indonesia scored an overall of 3.08 and ranked 53rd. In the 2012 LPI edition, Indonesia had an overall score of 2.94 and ranked 59th. In the 2010 LPI edition, Indonesia scored 2.76 overall and ranked 75th. In the first LPI edition (2007), Indonesia scored an overall of 3.01 and ranked 43rd.

Breaking down Indonesia's performance by indicators reveals mixed results. The country improved slightly in customs (from 2.7 to 2.8) and infrastructure (from 2.895 to 2.9). However, it saw declines in other areas: timeliness dropped from 3.7 to 3.3, tracking & tracing from 3.3 to 3.0, international shipments from 3.2 to 3.0, and logistics competence & quality from 3.1 to 2.9. Specifically, Indonesia scored 2.8 for the customs indicator (ranked 59th); 2.90 for the infrastructure indicator (ranked 59th); 3.0 for the international shipments indicator (ranked 57th); 2.90 for the logistics competence and quality indicator (ranked 65th); 3.0 for the tracking and tracing indicator (ranked 65th); and 3.30 for the timeliness indicator (ranked 59th). It is noticeable that the timeliness indicator received the highest score and customs indicator received the lowest score compared to the other indicators.

Comparison with other ASEAN countries

When compared to ASEAN countries, in the organization of the LPI edition 2023, Indonesia's logistics performance, measured by the overall LPI score, is still below Singapore (with a score of 4.30 and ranked 1st), Malaysia (with a score of 3.70 and ranked 31st), Thailand (with a score of 3.50 and ranked 37th), the Philippines, (with a score of 3.30 and ranked 47th), and Vietnam (with a score of 3.30 and ranked 50th). Indonesia is above, Cambodia (with a score of 2.4 and ranked 116th), Lao PDR (with a score of 2.40 and ranked 120th). Brunei Darussalam and Myanmar did not participate in this LPI edition.

When broken down by indicators, for the customs indicator, Indonesia is below Singapore (with a score of 4.2), Thailand and Malaysia (with a score of 3.3), and Vietnam (with a score of 3.1); Indonesia is tie with the Philippines, (with a score of 2.8); and above Lao PDR (with a score of 2.30) and Cambodia (with a score of 2.20). For the infrastructure indicator, Indonesia is below

Singapore (with a score of 4.6), Thailand (3.7), Malaysia (3.6), as well as Vietnam and the Philippines (3.20); however, Indonesia is above Laos (2.3) and Cambodia (2.1). For the logistics quality indicator, Indonesia is below Singapore (with a score of 4.4), Malaysia (with a score of 3.7), Thailand (with a score of 3.50), the Philippines (with a score of 3.30), and Vietnam (with a score of 3.2); however, it is above Lao PDR and Cambodia (with a score of 2.4). For the international shipments indicator, Indonesia is below Singapore (with a score of 4.0), Malaysia (3.7), Thailand (3.5), Vietnam (3.3), and the Philippines (3.1); however, it is above Lao PDR and Cambodia (2.3). For the tracking and tracing indicator, Indonesia is below Singapore (with a score of 4.4), Malaysia (3.7), Thailand (3.6), Vietnam (3.4), and the Philippines (3.3); however, it is above Cambodia (2.8) and Lao PDR (2.4). Lastly, for the timeliness indicator, Indonesia is only below Singapore (with a score of 4.3), the Philippines (with a score of 3.9), Malaysia (with a score of 3.7), Thailand (with a score of 3.5), and Vietnam (with a score of 3.3); it is above Lao PDR (with a score of 2.8) and Cambodia (with a score of 2.7).

Recommendations and Strategic Issues

Here is a summary of potential improvements for Indonesia's logistics performance based on the indicators in the LPI, as of 2023:

1. Customs:
   - Indonesia can enhance customs clearance efficiency by improving processing times and reducing regional disparities. Digitalization (border management integration) and the modernization of customs operations are crucial for speeding up procedures.
   - Upgrading export-import facilities at borders, such as better infrastructure and improved management, will also help (Agne, 2023; Supply Chain Indonesia, 2023)
2. Infrastructure**:**
   - Current infrastructure, such as ports, airports, roads, and railways, is deemed insufficient for efficient logistics flow. The transport systems (intermodal and multimodal) are not well integrated, causing delays and higher logistics costs.
   - The strategic goal should be to improve domestic and global connectivity by developing efficient infrastructure at ports, international hubs, and expanding rail and truck networks. This will support smoother goods flow and reduce logistics costs (Supply Chain Indonesia, 2023; Voice of Indonesia, 2024)
3. International **Shipments:**
   - Improvements are needed in evaluating shipment costs, particularly for exports, and promoting the use of affordable transport modes. Streamlining the cost structure will make Indonesia more competitive in international trade (Agne, 2023).
4. Logistics Quality and Competence**:**
   - A strategic focus should be on developing globally recognized logistics skills. Enhancing the availability of professional, trained logistics personnel will increase the effectiveness of Indonesia's logistics system (Voice of Indonesia, 2024).
5. Tracking and Tracing:
   - The development of a national e-Logistics system (INALOG) that integrates technology for logistics and trade can greatly improve tracking and tracing. INALOG would facilitate the secure, online management of goods and data across ASEAN and global networks, extending the National Single Window system (Handayani et al., 2021; Supply Chain Indonesia, 2023).
6. Timeliness:
   - Delays caused by pre-shipment inspections, maritime transshipment, and informal charges continue to hamper delivery schedules. Learning from ASEAN countries like Singapore and Thailand, which have streamlined their delivery processes, will help. Reducing the time taken for customs and port processing is critical to improving timeliness (Agne, 2023; Voice of Indonesia, 2024).

By focusing on these areas, Indonesia can elevate its logistics performance and reduce costs, delays, and inefficiencies in the system.

Several strategic areas for improvement have been identified for Indonesia:

1. Customs: Enhancing the efficiency of customs processes through digitalization and reducing discrepancies between regional offices.
2. Infrastructure: Expanding and optimizing transport networks such as ports, airports, and railways to better connect production centers to global trade routes.
3. International Shipments: Lowering export shipping costs and promoting more affordable transport options.
4. Logistics Quality and Competence: Developing logistics professionals and increasing training to meet international standards.
5. Tracking and Tracing: Implementing advanced IT systems like the National Logistics System (INALOG) to improve cargo tracking, and connecting it to global logistics networks.
6. Timeliness: Reducing delays caused by pre-shipment inspections and improving port processing efficiency

Conclusions

The Logistics Performance Index (LPI) is a survey-based metric developed by the World Bank to measure the logistics performance of countries across six key dimensions: customs efficiency, infrastructure quality, international shipments, logistics competence, tracking and tracing, and timeliness. Since its introduction in 2007, the LPI has been widely recognized as a valuable tool for assessing the logistics environment and identifying areas for improvement in both national and international logistics systems. In the context of ASEAN, Indonesia's logistics performance in recent years has seen fluctuations. In the 2023 edition of the LPI, Indonesia's overall ranking dropped to 63rd globally, lower than Singapore (ranked 7th), Thailand (32nd), Vietnam (39th), and Malaysia (41st). Despite the decline, Indonesia still outperforms countries like the Philippines (60th), Laos (82nd), and Cambodia (98th) in logistics performance.

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