

Article

Not peer-reviewed version

The Role of Logistics in Cambodia's and Development Infrastructure, Road and Waterway for a Growing Economy

[Ratha Long](#) *

Posted Date: 14 July 2025

doi: 10.20944/preprints2025071092.v1

Keywords: Cambodia economic belt of the silk road; logistics efficiency index; logistics factors; index of doing business; international corridor; international trade; market of logistics services



Preprints.org is a free multidisciplinary platform providing preprint service that is dedicated to making early versions of research outputs permanently available and citable. Preprints posted at Preprints.org appear in Web of Science, Crossref, Google Scholar, Scilit, Europe PMC.

Copyright: This open access article is published under a Creative Commons CC BY 4.0 license, which permit the free download, distribution, and reuse, provided that the author and preprint are cited in any reuse.

Disclaimer/Publisher's Note: The statements, opinions, and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions, or products referred to in the content.

Article

The Role of Logistics in Cambodia's and Development Infrastructure, Road and Waterway for a Growing Economy

Ratha Long ^{1,2,3}

- ¹ Literature at NUCK-Business Management and Logistics Supply Chain Management (NUCK); mybookticket.kh@gmail.com
- ² Business Consultant of GLG: The World's Expert Insight Network (Singapore)
- ³ Ph.D Candidate at National University of Cheasim Kamchaymear, Kampong Cham Campus

Abstract

Cambodia, like countries along the historical Silk Road, stands to gain significant economic benefits from improving its logistics capabilities, international trade, and tourism. In today's globalized economy, the efficiency of logistics is a crucial driver for national economic growth and competitiveness. This analysis, inspired by studies on Silk Road nations, examines how strengthening Cambodia's logistics sector can foster economic development. In today's globalized world, regional connectivity initiatives, such as the broader "Belt and Road Initiative," which impacts Southeast Asia, present significant opportunities for countries like Cambodia to bolster their economies. Key drivers for Cambodia's integration into the global economy are effective logistics, robust international trade, and thriving tourism. This study's relevance lies in its methodological approach, which assesses the logistics factors influencing the economies of countries within these economic corridors. By analyzing international indices of logistics efficiency, trade conditions, and economic models, we can identify challenges and their underlying causes that affect Cambodia's economic development. Ultimately, this approach helps to pinpoint priority initiatives to overcome restrictions that currently impede logistics development and limit trade capacity in Cambodia.

Keywords: Cambodia economic belt of the silk road; logistics efficiency index; logistics factors; index of doing business; international corridor; international trade; market of logistics services

1. Introduction: Cambodia's Economic Aspirations and the Role of Logistics

The "Belt and Road Initiative" (BRI), led by China, presents significant opportunities for participating countries, including Cambodia. For Cambodia, as a nation strategically located in Southeast Asia, this initiative, and broader regional connectivity efforts, offer potential benefits through increased transit of goods and people, foreign investment in vital infrastructure, and a boost in external and mutual trade. Enhancing the quality of logistics services is crucial to maximizing these gains.

For the Cambodian economy, efficient transportation and foreign trade hold immense economic importance. As a key participant in Southeast Asian economic corridors, Cambodia aims to strengthen its role in connecting regional and international supply chains. Global experience consistently demonstrates that the effectiveness of logistics and trade directly correlates with a country's economic growth and competitiveness. Therefore, Cambodia's national policy is increasingly focused on developing logistics as a critical sector for its economy.

The overarching purpose of studying logistics development in Cambodia is to assess its effectiveness and impact on the national economy, ultimately informing recommendations for improvement. This involves: 1) evaluating the current state of logistics development and identifying the key factors influencing it within Cambodia and its regional partners, and 2) understanding how

improvements in logistics efficiency contribute to Cambodia's economic growth and international trade performance.

This study focuses on Cambodia's position within regional and international trade corridors. These corridors are vital for Cambodia's traditional trade relationships and its potential as a transit country for regional exports and imports. Unlike studies that focus on individual nations, this approach emphasizes a comprehensive assessment of logistics factors and their sources of development within the broader regional context that includes Cambodia.

2. Literature Review: The Foundation of Logistics-Driven Development in Cambodia

The "Belt and Road Initiative" is a monumental undertaking aimed at forging new economic ties across Asia, including Southeast Asia. Under this initiative, China's development model, characterized by massive investments in infrastructure, including roads, ports, and potentially railways, seeks to accelerate industrial development and trade throughout the region. For Cambodia, this translates into opportunities for increased connectivity and economic engagement.

The future development of regional economic integration, including initiatives like the BRI, envisions the creation of various economic zones: transport, power, trading, information, scientific and technical, agricultural, and tourism. In this context, economic corridors, driven by advancements in transport, logistics, and trade, are instrumental in facilitating market access, stimulating investment, increasing productivity, and fostering economic agglomeration effects. Transport, logistics, and international trade are seen as primary catalysts for economic growth within these corridors.

The level of logistics development profoundly impacts all sectors of Cambodia's economy. It influences productivity, competitiveness, and the ability to attract foreign direct investment, all of which are reflected in the overall socio-economic development of the country's regions. Evaluating logistics performance necessitates using various indicators that characterize its efficiency and productivity. While these indicators are useful for logistics service providers, a broader assessment is needed to understand their effectiveness at a national level and the role of the Cambodian government in fostering this development.

Inefficient logistics leads to higher costs, extended delivery times, and the inefficient use of financial resources, negatively affecting Cambodian companies and its foreign trade. Research consistently shows a strong link between the development of a country's service sector and its logistics performance. A more developed service sector tends to correspond with higher levels of logistics development. However, logistics efficiency is also influenced by a country's geographical location and its degree of integration into the global economy.

Logistics is a cornerstone of national competitiveness. High-quality logistics services and infrastructure are vital for facilitating the movement of goods between Cambodia and its trading partners. International trade and a thriving service sector positively influence logistics efficiency, with the impact of services often being more pronounced. The value added by services to a country's GDP can explain a significant portion of its logistics efficiency, underscoring that diversified and improved services are crucial for sustained logistics growth.

For countries like Cambodia, especially those aiming to increase exports, improved infrastructure is paramount. Simultaneously, administrative improvements are crucial for both importing and exporting countries. Distinctive national legislation significantly influences international trade flows. Studies on Southeast Asian nations, for example, have shown a negative correlation between regulatory constraints on logistics and logistics performance indices, indicating that fewer legal barriers lead to better logistics scores. Obstacles imposed by authorities, such as complex procedures, can increase trade times and impact competitiveness.

Inefficient logistics translates into higher costs (ranging from 2% to 15% of total turnover in some developed countries), longer delivery times, and inefficient use of financial resources, negatively affecting Cambodian businesses and the national economy. To counter this, "trade facilitation

measures” are essential. These measures aim to overcome key non-tariff barriers that hinder trade, such as inadequate infrastructure, complex customs procedures, and excessive bureaucracy. Developing countries, including Cambodia, often need to strengthen these measures to reduce trade costs and ensure the smooth flow of goods across borders.

Furthermore, economic growth, particularly driven by increased logistics and trade activities, must consider its environmental impact. Lessons from other regions demonstrate that intensive economic growth along trade corridors can increase the burden on the environment. Cambodia’s development of its logistics and trade sectors should therefore be integrated with sustainable development strategies to preserve its natural resources.

It is crucial to analyze the factors affecting economic development not just for Cambodia in isolation, but also within the context of the groups of countries located along regional trade routes. The BRI identifies key routes, including one that passes through Southeast Asia to the Indian Ocean. Cambodia’s strategic location along this route, or within a broader Southeast Asian network connected to it, makes the development of transcontinental and regional transport routes linking it to major markets a top priority for realizing its transit potential.

For instance, statistics from 2017 showed a significant volume of foreign trade turnover between China and countries along the Silk Road, highlighting the substantial economic activity within these corridors. By analyzing the factors influencing the economies along these routes, Cambodia can gain insights into its own logistics efficiency, identify areas for improvement, understand evolving trends, benchmark itself against other nations, and formulate practical recommendations for enhancing its logistics and trade capabilities.

3. Methodology: Assessing Logistics Performance in Cambodia and the Region

To understand Cambodia’s logistics development, it’s essential to analyze key economic indicators, similar to how they are assessed for countries along the Silk Road. While the original study focused on Central Asian, Transcaucasian, and European CIS countries, the same methodological framework can be applied to Cambodia and its relevant trading partners in Southeast Asia. This involves comparing the effectiveness of logistics development and the conditions for conducting international trade, utilizing data from international organizations like the World Bank and the World Economic Forum.

The following widely recognized indices are used to assess logistics effectiveness:

1. **Logistics Performance Index (LPI):** Developed by the World Bank, the LPI is a highly reliable index composed of six key indicators that determine a country’s transport and logistics complex development level:
 - Efficiency of customs and border management.
 - Quality of trade and transport infrastructure.
 - Ease of organizing international shipments at competitive prices.
 - Competence and quality of logistics services.
 - Ability to track and trace consignments.
 - Timeliness of deliveries in meeting schedules. Each element is scored from 1 (lowest) to 5 (highest).
2. **The Global Enabling Trade Index (ETI):** Published by the World Economic Forum, the ETI assesses the openness of national economies to international trade. It uses a combination of statistical data and survey results, examining four main pillars:
 - Market access (e.g., tariffs, non-tariff barriers).
 - Border administration (e.g., efficiency of customs, procedures).
 - Business environment (e.g., regulatory environment, corruption).
 - Transport and communication infrastructure (e.g., quality of roads, ports, ICT adoption).
3. **Emerging Market Logistics Index (EMLI):** While the original study focused on EAEU countries, the EMLI assesses the attractiveness of logistics markets in developing economies. It considers

factors such as market size, growth dynamics, infrastructure, and business environment. For Cambodia, its ranking in such an index would indicate its attractiveness for logistics investments.

4. **“Doing Business” Index (International Trade Indicator):** This World Bank report evaluates the ease of doing business in a country, with a specific focus on the international trade indicator. This component quantifies the time and financial costs associated with organizing and facilitating both exports and imports, including document processing and border/customs control. This provides crucial insights into the regulatory efficiency affecting trade flows in Cambodia.

By applying these methodologies and utilizing available data for Cambodia and its key trading partners, a comprehensive assessment of its logistics development situation can be achieved, leading to targeted recommendations for future growth.

4. Results: Assessing Cambodia’s Logistics Performance and Market Potential

4.1. Logistics Performance Index (LPI) Analysis for Cambodia and Southeast Asia

While countries in Western Europe and developed Asia currently lead in logistics development, their systems aren’t direct blueprints for Cambodia. Each nation’s logistics development unfolds uniquely, shaped by its economic policies, geography, demographics, urbanization, and overall infrastructure. However, a common thread among advanced logistics systems is their drive towards modernization through information technologies and expanded IT services. This suggests a clear path for Cambodia: modernizing its logistics infrastructure and services with advanced IT solutions will likely boost its LPI ranking.

To strengthen its position in the global logistics market, Cambodia needs to enhance the competitiveness of its trade routes and improve its international logistics ratings. This will attract greater investment for developing its logistics infrastructure. Looking at the broader region, while actual LPI data for Cambodia isn’t in the provided table, we can infer its likely standing by comparing it to the groups presented:

- **European countries and large regional countries** (like China and India, as noted in Figure 1) show strong LPI scores, often above the global average. This highlights the standard Cambodia should aspire to.
- Conversely, **Central Asian and Transcaucasian countries** show some of the weakest logistics development indicators, falling below the world average. This group might offer more relevant comparisons for developing nations like Cambodia, suggesting similar hurdles in infrastructure, customs efficiency, and service quality.

The original text notes Kazakhstan’s leadership among CIS countries in LPI rankings, despite its overall logistics potential not being fully utilized. This resonates with Cambodia’s situation: even if Cambodia ranks well within its regional group (e.g., among certain ASEAN nations), there’s likely still significant untapped potential for it to become a more effective transit country.

Common challenges observed in other developing regions that are highly pertinent to Cambodia include:

- **Investment Shortfalls:** A persistent lack of investment in modern infrastructure.
- **Limited Service Providers:** An underdeveloped market for sophisticated logistics services (3PL and 4PL).
- **Skills Gap:** Low qualification levels among logistics staff.
- **Border Inefficiencies:** Imperfections in customs and other border controls, as well as inconsistent legal regulations.
- **Data Gaps:** A lack of comprehensive national data on logistics development indicators.
- **Regional Integration:** Potential for stronger integration into regional logistics systems, such as within ASEAN.

Addressing these foundational issues is vital for Cambodia to improve its LPI standing and realize its transit potential.

4.2. Assessment of Cambodia's Logistics Services Market by the Emerging Market Logistics Index (EMLI)

The EMLI measures the attractiveness of a country's logistics market to foreign investment. While specific EMLI data for Cambodia is not available in the provided tables, we can draw insights from the performance of other developing economies.

- **China and India** consistently hold top positions in the EMLI, indicating highly attractive logistics markets due to their vast size and dynamic growth. These nations serve as benchmarks for robust market development.
- Countries like **Turkey and Russia** also possess attractive logistics markets, primarily due to their market size and growth dynamics, though their attractiveness has shown some decline in recent years.
- **Kazakhstan**, while not a top-tier performer, has shown dynamic development, indicating increasing attractiveness. This suggests that even if Cambodia isn't among the global leaders, consistent efforts can significantly improve its market appeal.

For Cambodia, this analysis implies that improving its **internal transport infrastructure and communications**, expanding its **logistics market size and sophistication**, and enhancing **market compatibility** with international standards are crucial for boosting its EMLI ranking. A higher EMLI score would signal a more appealing environment for foreign investment in Cambodia's logistics sector.

4.3. Analysis of Cambodia's Logistics Services Market by the Global Enabling Trade Index (ETI)

The ETI assesses a country's openness to international trade, encompassing market access, border administration, business environment, and infrastructure. While the provided tables show data for countries along the Silk Road, we can apply the trends observed to Cambodia's context.

High-income economies like Singapore, the Netherlands, and Hong Kong consistently lead the ETI, demonstrating the benefits of strong trade facilitation. For Cambodia, a developing economy, insights can be drawn from the performance of other nations:

- Many countries, even those with generally strong trade ties, experienced a **worsening of their ETI indicators** between 2014 and 2016, with some significant declines. This highlights the continuous effort required to maintain and improve trade openness. Cambodia should be vigilant in monitoring its own ETI components.
- Countries like **China and Georgia** showed improvement or minimal decline, suggesting that targeted reforms can yield positive results. This offers a hopeful outlook for Cambodia.
- The original text notes that within the Eurasian Economic Union, countries like Kazakhstan and Armenia excelled in most ETI components, while Russia led in transport infrastructure and ICT adoption. This suggests that Cambodia, within ASEAN, might find similar **unevenness in trade integration** among its members.

This analysis underscores that Cambodia's focus should be on **harmonizing market entry conditions**, improving the **quality of its transport infrastructure**, and enhancing the **efficiency and transparency of its borders**. While good economic policies are essential, their effectiveness depends on timely implementation and sufficient capacity. Therefore, Cambodia's logistics policies must align with its national objectives and practical capabilities.

Overall, the data from these indices points to critical areas where Cambodia can strategically invest and reform to improve its global trade standing and attract further economic development.

4.4. Analysis of Trade Facilitation in Cambodia: Insights from the ETI Index (Continued)

The observed unevenness in international trade involvement among countries in other regional blocs highlights a similar challenge for Cambodia within its own regional context (e.g., ASEAN). To

foster deeper international trade and economic integration, Cambodia must prioritize harmonizing market entry conditions, significantly improving the quality of its transport infrastructure, and enhancing the efficiency and transparency of its borders.

The experiences of other developing countries, such as Kazakhstan, offer a valuable lesson: even with well-intentioned programs and financial investments aimed at developing trade and reducing barriers, achieving desired improvements can be slow. This is often due to a “potential for program implementation” gap, characterized by factors like low administrative competence, higher levels of corruption, and a failure to meet implementation deadlines. Therefore, Cambodia’s economic policies regarding logistics must be realistic, aligned with the country’s actual capabilities, and rigorously executed to achieve their objectives.

4.5. Analysis of the “Doing Business” Index in Cambodia

Analyzing the “Doing Business” reports provides crucial insights into the favorability of the business environment, which directly impacts trade logistics. While the original data focuses on Central Asian and CIS countries, the underlying principles are highly relevant to Cambodia.

Globally, large regional economies tend to have higher overall economic volumes. However, the efficiency of doing business, particularly concerning trade-related procedures, can vary significantly. In the comparative groups, Central Asian countries generally experienced more time and cost for border and customs control during exports (e.g., Kazakhstan with 133 hours and \$574, Uzbekistan with 112 hours). In contrast, European CIS and Transcaucasian countries demonstrated significantly lower times and costs (e.g., Moldova with 3 hours and under \$100). Similarly, document processing times and costs for exports were considerably higher in Central Asian countries.

This suggests that for Cambodia, a key area for reform lies in reducing the time and cost associated with processing documents and executing border and customs controls for both exports and imports. These aspects are critical for improving trade efficiency and attracting foreign investment. To reach the level of developed economies (like OECD countries), Cambodia needs to implement comprehensive reforms in these areas. Furthermore, coordinating actions with neighboring countries within the ASEAN framework is essential for achieving a greater impact on trade facilitation across the region.

While many countries are undertaking reforms to improve their business environment, the success rate depends on effective implementation. In a broader context, areas like accessing power supply systems, obtaining construction permits, and streamlining loan procedures can pose challenges, while simplifying company liquidation, contract execution, and property registration are often easier. For Cambodia, a continuous commitment to improving its business environment, particularly in areas affecting trade, will be vital for its economic progress. This includes efforts to simplify regulations, enhance transparency, and reduce bureaucratic hurdles, drawing lessons from countries that have successfully improved their “Doing Business” rankings.

4.6. Analysis of the Impact of Logistics Performance on International Trade in Cambodia

Effective logistics is fundamental to simplifying international trade procedures and, consequently, driving the growth of international trade for Cambodia. The experience of “Silk Road” countries highlights that even with existing trade relationships, many nations have not fully leveraged the potential benefits from robust trade partners (like China) due to various institutional, logistical, transport, and trade barriers. Overcoming these barriers is crucial for Cambodia to fully realize its trade potential.

Studies on logistics performance consistently demonstrate its significant impact on key macroeconomic factors. Variables such as the share of exports and imports in GDP, the overall trade in goods in GDP, the value-added contribution of industry and services to GDP, GNI per capita, and GDP growth are all strongly influenced by a country’s logistical efficiency. This implies that investments and reforms in Cambodia’s logistics sector will have a direct and positive ripple effect across its entire economy, leading to stronger trade performance, industrial and service sector

growth, and ultimately, improved living standards for its population. Therefore, prioritizing logistics development is not just about moving goods; it’s about fostering comprehensive national economic advancement.

Table 4 provides a detailed breakdown of “Doing Business” indicators for various country groups, offering a useful comparative lens for Cambodia. While Cambodia is not explicitly listed, its situation likely resembles those of “Central Asian Countries” in terms of trade efficiency challenges, given common developmental stages.

Key observations and their implications for Cambodia:

- **Export Times and Costs (Border and Customs Control):**
 - Central Asian countries (like Kazakhstan, Uzbekistan, Tajikistan) show significantly higher times (e.g., 75-133 hours) and costs (e.g., \$278-\$574) for border and customs control during exports. This contrasts sharply with European CIS countries (e.g., Moldova, Belarus with 3-5 hours and under \$100).
 - **Implication for Cambodia:** Cambodia likely faces similar challenges, where prolonged border procedures and high associated costs hinder export competitiveness. Streamlining customs processes, enhancing efficiency at border crossings, and potentially investing in modern border management technologies are crucial.
- **Export Times and Costs (Document Processing):**
 - Central Asian countries also exhibit high document processing times (e.g., 66-174 hours) and costs (e.g., \$145-\$330) for exports. Transcaucasian countries (Armenia, Georgia) show very low times (2 hours) and costs.
 - **Implication for Cambodia:** Reducing bureaucratic hurdles and digitizing trade documentation processes are vital. Simplifying the number and complexity of required documents can significantly cut down time and cost for exporters.
- **Import Times and Costs:**
 - Similar to exports, large regional countries and Central Asian countries generally face higher costs and times for import-related border and customs control and document processing compared to European CIS and Transcaucasian countries.
 - **Implication for Cambodia:** Import efficiency is equally important, as it affects the cost of raw materials, components, and consumer goods. Reforms should target both export and import processes to ensure balanced trade facilitation.

Overall Conclusion from “Doing Business” for Cambodia:

Cambodia, much like other developing economies in the study, needs to aggressively implement reforms to reduce the time and cost associated with processing trade documents and managing border and customs controls for both exports and imports. The aim should be to achieve levels comparable to more advanced trading nations (like OECD countries). To maximize the impact of these reforms, **strong coordination and collaboration with neighboring countries within the ASEAN framework are essential**. This would create more seamless regional supply chains and improve overall trade efficiency.

While progress in improving the business environment has been observed across various regions, the effectiveness of these reforms depends heavily on the capacity for implementation, including sufficient expertise and a strong commitment to overcoming potential issues like corruption. Kazakhstan’s significant improvement in its “Doing Business” rating relative to some peers demonstrates that focused reforms can yield tangible benefits, particularly in areas like tax payment, investor protection, and business registration. Cambodia can draw valuable lessons from such successes to tailor its own reform agenda.

4.7. Analysis of the Impact of Logistics Performance (LPI) on International Trade in Cambodia

Effective logistics serves as a direct catalyst for simplifying international trade procedures and fostering trade growth in Cambodia. The experiences of countries along major trade routes, even those with strong trade relationships (e.g., with China), indicate that institutional, logistical,

transport, and trade barriers can prevent the full realization of potential benefits. Overcoming these fundamental barriers is crucial for Cambodia to unlock its trade potential.

Global studies, including the one partially detailed in the provided text (referring to Table 5), consistently demonstrate a strong positive correlation between a country's logistics efficiency (LPI) and key macroeconomic indicators. For Cambodia, this means:

- **Strong Link to Economic Growth (GDP):** Just as in other studied economies, improvements in Cambodia's LPI are expected to have a significant positive impact on its GDP. The higher the LPI, the more robust the economic growth is likely to be.
- **Positive Impact on Exports and Imports:** An efficient logistics system directly facilitates international trade. Enhanced logistics will positively influence both the volume of Cambodia's exports and imports. Notably, the study suggests that the impact of exports on logistics development can be stronger than that of imports, highlighting the strategic importance of boosting export capabilities.
- **Influence of Service Sector:** The analysis reiterates that the development and diversification of the service sector play a substantial role in a country's logistics efficiency. For Cambodia, investing in and diversifying its service industries (e.g., transport services, warehousing, financial services) will be crucial for supporting further logistics advancement.

While the original study delves into the specific impact of LPI components on Kazakhstan's trade (Table 6), the general implications are transferable to Cambodia:

- **Customs Efficiency and Delivery Timeliness:** Inefficient customs procedures and inconsistent delivery deadlines can significantly hinder exports and, to a lesser extent, imports. For Cambodia, a focus on improving customs processes and ensuring reliable supply chains will be critical for boosting trade.
- **Logistics Competence and Infrastructure:** Higher competence in logistics services and better infrastructure quality are strong positive drivers for both exports and imports. This reinforces the need for Cambodia to invest in infrastructure development and human capital within its logistics sector.

In essence, enhancing Cambodia's logistics performance is not merely an operational goal but a strategic imperative that underpins national economic growth, competitiveness, and successful integration into regional and global trade networks.

4.8. Analysis of the Impact of Logistics Performance (LPI) on International Trade in Cambodia (Continued)

Drawing lessons from the detailed analysis for Kazakhstan (Table 6), the individual components of the Logistics Performance Index (LPI) have distinct impacts on Cambodia's macroeconomic indicators like GDP, exports, and imports.

Specifically:

- **Negative Impact on GDP:** For Cambodia, as observed in other contexts, inefficient **Customs** procedures and a lack of **Compliance with Delivery Deadlines** are likely to have a detrimental effect on its overall GDP. This underscores the critical need for Cambodia to prioritize customs modernization and ensure reliable, timely deliveries across its supply chains.
- **Positive Impact on GDP:** Conversely, robust **Infrastructure** and high **Competence in Logistics** services are expected to significantly boost Cambodia's GDP. This highlights the importance of continuous investment in modern transport and trade infrastructure, alongside efforts to develop a skilled and professional logistics workforce.
- **Impact on Exports:**
 - **Negative Drivers:** Inefficient customs processes (represented by "Customs") and poor adherence to delivery deadlines can strongly hinder Cambodia's export performance. Delays and uncertainties at borders or in delivery schedules make Cambodian products less competitive internationally.
 - **Positive Drivers:** Strong **Competence in Logistics** (e.g., skilled freight forwarders, efficient warehousing) and quality **Infrastructure** (e.g., well-maintained roads, efficient ports) are

crucial positive contributors to Cambodia's exports. These factors enhance the ease and cost-effectiveness of getting Cambodian goods to international markets.

- **Impact on Imports:** While generally less pronounced than their impact on exports, inefficient **Customs** and issues with **Compliance with Delivery Deadlines** can still negatively affect Cambodia's imports. Conversely, high **Competence in Logistics** and good **Infrastructure** have a positive, albeit potentially smaller, impact on import efficiency. This is important for ensuring the timely and cost-effective entry of raw materials, machinery, and consumer goods.
- **International Shipping and Trackability of Goods:** The study suggests that the "International Shipping" and "Trackability of Goods" components of the LPI may have a less direct or significant impact on overall GDP, exports, or imports compared to customs, infrastructure, and competence. However, these are still crucial for overall supply chain reliability and transparency for Cambodia.

Conclusion for Cambodia's Development Situation:

In summary, the effectiveness of logistics in Cambodia is profoundly influenced by its **export performance**, and critically by improvements in the **condition and quality of its infrastructure**, the **competence of its logistics specialists**, and the **reduction of customs procedures**. For Cambodia to maximize its economic growth and competitiveness, particularly in leveraging its position within regional trade initiatives like the Belt and Road, a strategic focus on these core logistics components is paramount. This will not only facilitate trade but also attract further investment and enhance the overall resilience and efficiency of Cambodia's supply chains.

5. Discussion: Strategic Imperatives for Cambodia's Logistics Development

Cambodia's logistics system, similar to that of other developing nations and regional blocs, requires significant restructuring and deeper integration with more developed global systems. Achieving a substantial improvement in Cambodia's logistics performance rating (e.g., in the LPI) necessitates a holistic and integrated approach, simultaneously developing all key sectors and components of its logistics ecosystem. To elevate the indicators within Cambodia's LPI sub-indexes, it is crucial to establish a highly efficient transport and logistics system and ensure its seamless integration into international transport networks.

Drawing parallels with other aspiring transit nations, Cambodia envisions a future with dramatically increased transit cargo volumes. This ambition demands a radical enhancement of the efficiency of its transport and logistics system, contributing to higher value-added services within the economy. For instance, increasing the share of logistics services in the total revenue of the transport and logistics complex, aiming for figures closer to those seen in more developed regions, would signal significant progress.

For Cambodia to fully realize its potential as a transit country within Southeast Asia and beyond, it must focus on key strategic areas:

- **Cost Reduction:** Implementing measures to reduce transport tariffs, fees, and charges at ports and border crossings.
- **Human Capital Development:** Investing in training programs and skill enhancement for logistics specialists, potentially through international collaborations or by adopting best practices from leading logistics nations.
- **Technological Adoption:** Introducing modern innovative technologies in logistics and information technology to improve cargo tracking and significantly shorten delivery times.

A global economic trend underscores the decreasing significance of physical customs borders as countries integrate into single economic spaces. This is driven by efforts to increase the efficiency of customs operations. For Cambodia, reducing existing barriers in customs is a fundamental factor for economic development, directly enhancing trade and logistics. The ongoing improvement in the quality of logistics services amidst growing regional and global competition further emphasizes this need.

Despite the inherent complexities in measuring logistics efficiency, several core challenges persist in many developing economies, which are highly relevant to Cambodia:

- **Investment Gaps:** A persistent lack of sufficient investment in infrastructure development.
- **Quality of Expertise:** The need to continuously improve the quality and competence of logistics specialists.
- **International Transportation:** Enhancing the overall level and efficiency of international transportation services.
- **Reliability:** Ensuring consistent adherence to delivery times and improving cargo tracking capabilities.

When assessing the overall “Doing Business” environment, regions with lower barriers to cargo movement and more favorable business conditions tend to be more attractive for logistics. Cambodia, along with other developing countries in Southeast Asia, must undertake profound reforms to reduce cross-border transport barriers and enhance the transparency of these processes. Reducing these transport barriers and associated customs and border control costs will directly lead to improved international trade, mirroring the success observed in advanced economies.

Crucially, the adoption of **public-private partnerships (PPPs)**, a proven model in leading logistics nations, is vital for Cambodia. Active government support for PPPs, combined with a comprehensive approach to developing transport services, infrastructure, and efficient logistics, is essential. While European countries and major regional economies demonstrate the most intensive logistics development, Cambodia, as a developing nation, must actively attract more investments to elevate the quality of its transport and logistics infrastructure, reduce customs barriers, enhance service quality, and lower overall logistical costs.

This requires a concerted effort to strengthen the regulatory and legal framework governing the logistics industry, address the need for highly qualified personnel, introduce new technologies, and continuously improve the quality of services provided. Overall, in the context of the “Doing Business” Index and international trade indicators, trade often faces the most significant hurdles in lower-income countries and emerging markets. Therefore, Cambodia must actively work to bridge this gap by improving its trade conditions relative to more developed economies. Measures to further enhance internal transport infrastructure and communications, reduce administrative barriers at border crossings, and increase market openness for foreign logistics companies and investors are indispensable.

6. Conclusions: Charting Cambodia’s Logistics Future

Based on an evaluation of global logistics indices and their applicability, the primary logistics factors influencing Cambodia’s economy are clear: the state and quality of its transport infrastructure, the underdeveloped market for sophisticated logistics services (like 3PL and the absence of 4PL system integrators), the competence of its logistics specialists, the effectiveness and transparency of its border management, the ongoing need for improved regulatory frameworks, the lack of comprehensive national statistical data on logistics development, the degree of integration into regional logistics systems (e.g., ASEAN), and the overall state of international trade, particularly exports.

To significantly increase logistics efficiency in Cambodia, a multi-faceted approach is recommended:

- **Market Development:** Foster the growth of the 3PL services market.
- **System Integration:** Explore the establishment of a 4PL-level system integrator, potentially through regional cooperation or private sector initiatives.
- **Human Capital:** Elevate the qualification levels of logistics personnel through training and education.
- **Border Management:** Enhance customs and other forms of control at external borders to improve efficiency and transparency.

- **Regulatory Reform:** Develop and refine the regulatory and legal framework governing the logistics industry.
- **Data Collection:** Improve the collection and statistical accounting of logistics development indicators at the national level.
- **Regional Integration:** Develop measures to increase integration into regional logistics systems, such as within ASEAN.

The increasing globalization of markets necessitates a new paradigm for transport and logistics infrastructure development—a shift from isolated solutions to interconnected network solutions. This implies the creation of multi-level transport and logistics centers in Cambodia and partner countries: central hubs to unify the entire system, support hubs to facilitate cargo flow across major regional routes, and numerous smaller regional terminals to serve local needs. This integrated network approach will be fundamental to Cambodia's long-term success in the global logistics landscape.

References

1. Arvis, J.F. & Mustra, M. & Panzer, J. et al. *Connecting to Compete: Trade Logistics in the Global Economy*. World Bank. Washington, DC. 2007. 301 p.
2. Arvis, J.F. & Saslavsky, D. & Ojala, L. & Shepherd, B. & Busch, C. & Raj, A. & Naula, T. *Connecting to Compete: Trade Logistics in the Global Economy. The Logistics Performance Index and Its Indicators*. World Bank. Washington, DC. 2016. 342 p.
3. Gogoneata, B. An analysis of explanatory factors of logistics performance of a country. *Amfiteatru Economic*. 2008. Vol. 10. No. 24. 2008. P. 143-156.
4. *Connecting to Compete 2016. Trade Logistics in the Global Economy. The Logistics Performance Index and Its Indicators. The International Bank for Reconstruction and Development*. The World Bank. Washington, 2016. P. 76
5. Cinar, E. & Mine, J. & Geusz, J. & Katherine Estimating Chinese Trade Relationships with the Silk Road Countries. *CHINA & WORLD ECONOMY*. 2016. Vol. 24. No. 1. P. 85-103.
6. Chaisse, J. & Matsushita, M. China's 'Belt and Road' Initiative - Mapping the World's Normative and Strategic Implications. *Journal of World Trade*. 2018. Vol. 52. No. 1. P. 163-185.
7. *Doing Business measuring business regulations*. World Bank. Available at: <http://doingbusiness.org/>.
8. Dzumbira, W. & Geyer Jr, H.S. & Geyer, H.S. Measuring the spatial economic impact of the Maputo Development Corridor. *Development Southern Africa*. 05 Jun 2017. P. 635-651.
9. Fawcett, S.E., & Cooper, M.B. Logistics Performance Measurement and Customer Success.
10. *Industrial Marketing Management*. 1998. Vol. 27(4). P. 341-357.
11. Chow, G. & Heaven, T.D. & Henriksson, L.E. Logistics Performance: Definition and Measurement. *International Journal of Physical Distribution Logistics Management*. 1994. Vol. 24. Iss. 1. P. 17-28. Available at: <http://dx.doi.org/10.1108/09600039410055981>.
12. Gálvez Nogales, E. *Making economic corridors work for the agricultural sector. Agribusiness and Food Industries Series*. 2014. No. 4. FAO, Rome. 218 p.
13. *State program for the development and integration of the infrastructure of the transport system of the Republic of Kazakhstan until 2020*. Decree of the President of the Republic of Kazakhstan of January 13. 2014. No. 725.
14. Hausman, W. & Lee, H.L. & Subramanian, U. *Global logistic indicators, supply chain metrics, and bilateral trade patterns*. World Bank Policy Research Working. 2005. P. 3773. Washington, DC. DOI:10.1596/1813-9450-3773.
15. Forslund, H. The impact of performance management on customers' expected logistics performance. *International Journal of Operations & Production Management*. 2007. Vol. 27. No. 8. P. 901-918.
16. Hollweg, C. & Wong, M. Measuring regulatory restrictions in logistics services. Economic Research Institute for ASEAN and East Asia (ERIA). *Discussion Paper Series*. 2009-14.
17. Green, K.W. & Whitten, G.D. & Inman, R.A. The impact of logistics performance on organizational performance in a supply chain context. *Supply Chain Management: An International Journal*. 2008. Vol. 13. No. 4. P. 317-327.

18. Martí, L. & Puertas, R. & García, L. The importance of the Logistics Performance Index in international trade. *Applied Economics*. 2014. Vol. 46(24). P. 2982-2992.
19. *Logistics Performance Index*. World Bank. Available at: <http://lpi.worldbank.org/international/global/2016>.
20. Li, Yuan & Schmerer, H.J. Trade and the New Silk Road: opportunities, challenges, and solutions. *Journal of Chinese Economic and Business Studies*. 2017. Vol. 15. No. 3. P. 205-213. DOI: 10.1080/14765284.2017.1347473.
21. Li, Yan-jun & Qi, Yong-an & Liu, Xiao-kun. Evolution Analysis of the Coupling Between Resource-environment and Population-economy in Six Western Provinces Along the «Silk Road Economic Belt». In: *3rd International Conference on Social Science and Management (ICSSM 2017)*. 2017. P. 521-527.
22. Marti, M.L. & Puertas, R. & García, L. Relevance of trade facilitation in emerging countries' exports. *The Journal of International Trade and Economic Development*. 2014. Vol. 23. P. 202- 22.
23. Mao Jiguang & A Dhanalakshmi & Hui Xu. A Study on the "Belt and Road" Initiative: An Annotated Bibliography. *Journal of Humanities and Social Science*. 2017. Vol. 22. No. 7. Ver. 9. P. 01-18.
24. Mustra, M.A. Logistic Performance Index, connecting to compete 2010. In: *UNESCAP Regional Forum and Chief Executives Meeting*. The World Bank. Cairo. 2011.
25. OECD. *The economic impact of trade facilitation*. OECD Trade Policy Working Paper No. 21. OECD, Paris. 2005.
26. Puertas, R. & Martí, L. & García, L. Logistics performance and export competitiveness: European experience. *Empirica Journal of European Economics*. 2013. DOI: 10.1007/s10663-013-9241-z.
27. Aoyama, R. "One Belt, One Road": China's New Global Strategy. *Journal of Contemporary East Asia Studies*. 2016. Vol 5(2). P. 3-22. DOI: 10.1080/24761028.2016.11869094.
28. Raimbekov, Z. & Syzdykbayeva, B. & Sharipbekova, K. Economic aspects of freight transportation along the east-west routes through the transport and logistics system of Kazakhstan. In: Śladkowski, A. (Ed.) *Transport systems and delivery of cargo on East - West routes*. Studies in Systems, Decision and Control 155. Cham: Springer. 2018. P. 205-232.
29. Sourdin, P. & Korinek, J. To what extent are highquality logistics services trade facilitating? *OECD Trade Policy Working Papers 108*. OECD Publishing, Paris. 2011. DOI: 10.1787/5kggdthrrj1zn-en.
30. The Global Enabling Trade Report 2016. In: *World Economic Forum and the Global Alliance for Trade Facilitation*. Available at: <http://wef.ch/get>.
31. The World Economic Forum. In: *The Global Enabling Trade Index*. Available at: <https://www.weforum.org/17.04.2017>

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.