# Chapter 4

# Improving Logistics Connectivity of E-commerce in the ASEAN Region

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Chapter

4

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Arkadiusz Kawa

## 1. Introduction

E-commerce creates opportunities for competition and expansion on a larger scale for already existing entities and offers prospects for rapid development to emerging ones due to low entry barriers that have been encouraging more companies to sell their products on the Internet. In most cases, the Internet constitutes an additional source of sales for brick-and-mortar players. Only some companies are focused solely on e-commerce ('pure players'). The offline and online worlds increasingly permeate and complement each other, which is why an omnichannel strategy is being created to integrate multiple sales and distribution channels.

The dynamic development of e-commerce is driven not only by increased household access to the Internet but also by growing mobility and popularity of portable devices (e.g. smartphones, tablets), via which customers order goods and services at their convenience more frequently. Customers order not only things of great value but also, everyday products they want quickly.

E-commerce is increasing its share of the market and has great potential. Global online sales in 2017 grew by about 24.8% over 2016 and amounted to about US$2.3 trillion (10.2% of total retail sales) (eMarketer, 2018). By 2021, global sales via the Internet are predicted to reach US$4.9 trillion. E-commerce in Southeast Asia is estimated at US$15 billion and it is only a tiny part of global e-commerce (0.7%) (Frost & Sullivan, 2016). For example, within a single day (Ali-double-11) Alibaba's merchants sold over $25 billion worth of products; JD.com reported online orders worth US$19 billion the same day (Chen, 2017b).

Asian Development Bank (ADB) (2017) research shows that the Association of Southeast Asian Nations (ASEAN) e-commerce market is in its nascent stage because of its underdeveloped digital payment infrastructure and weak logistics framework. Despite this, the region has great potential to develop e-commerce, thanks to its 640 million people, half

of whom are under 30 (Sangwongwanich, 2017; Suhud, 2017). By the end of 2015, about 306 million people in ASEAN were active social media users, 273 million of whom accessed social media networks via mobile devices (We Are Social, 2017). Half of Thais and one third of Malaysians and Indonesians purchased products on the Internet directly via a social media channel (ADB, 2017).

ASEAN is one of the world's fastest-growing regions in e-commerce, despite the number of constraints affecting the region's ability to recap all the benefits. A recent google research carried out with Singapore-based Temasek Holdings shows that in ASEAN, Internet users will double to 600 million and e-commerce will reach up to US$88 billion in 2025, or at least 6% of all retail sales (Sangwongwanich, 2017). This is supported by A.T. Kearney (2015), which projects the regional e-commerce value to surpass US$67 billion and reach US$89 billion in several years. Thailand and Indonesia display the biggest growth potential (ASEANup, 2018).

E-commerce assumes increasing importance as it enables these ASEAN countries to plug into the international trade networks more efficiently (Yean and Basu-Das, 2018b). Export opportunities for entrepreneurs in the ASEAN region would increase by as much as one-third if they started to use e-commerce solutions (Deloitte, 2017). However, further intensive development of e-commerce faces challenges. One challenge is logistics. Other challenges are countries' institutions, infrastructure, and implementation capacities.

The adequacy of infrastructure varies across countries. Fragmented roads and poor-quality railroads, maritime, and air transport infrastructure are the main problems in many ASEAN member states (Yean and Basu-Das, 2016). Relatively speaking, a major part of the region is still lagging behind in the progress digital infrastructure (broadband access to the Internet, e-payment penetration, access to information is about the logistics market) and standardisation (use of IT systems, loading units, consignment labels). Upgrading infrastructure and improving infrastructure are on top of the list of priority actions to promote e-commerce. For policymakers, the following issues deserve more attention: (i) the barriers to developing logistics connectivity, (ii) the ways to reduce impediments and inequalities in e-commerce logistics, and (iii) effort to share experience and apply best practices.

The objective of this chapter is threefold: (i) to identify impediments to logistics connectivity and inequalities in ASEAN e-commerce market, (ii) to highlight the best practices in logistics connectivity in e-commerce, and (iii) to propose policy recommendation on how to improve logistics connectivity to promote cross border e-commerce.

The structure of the chapter is as follows. Section 2 presents the definitions and meanings of logistics, then describes the logistics industry and its importance. Section 3 introduces

e-commerce logistics, especially different solutions supporting online businesses. Section 4 presents the three main components of logistics connectivity: physical, institutional, and people to people. Section 5 describes the impediments to and inequalities in logistics connectivity. Section 6 proposes policies, especially liberalisation and facilitation measures, to improve infrastructure, increase standardisation, and encourage cooperation. Section 7 summarises e-commerce logistics connectivity impediments and inequalities and recommends initiatives and policies to improve logistics connectivity.

## 2. The Importance of Logistics to ASEAN

Logistics is the process of planning, implementing, and controlling cost-effective flow and storage of things between the point of origin and the point of consumption to meet customers' requirements (Council of Supply Chain Management Professionals, 2018). Logistics is defined in a similar way by the US Coalition of Services Industries: 'the process of planning, implementing, managing and controlling the flow and storage of goods, services and related information from the point of origin to the point of consumption' (Sugie et al., 2015). The resources managed can include physical items such as materials, raw materials, in-process inventory, finished goods, as well as abstract items such as information. Apart from supporting the processes to manage the flow of goods, logistics integrates and interconnects business entities. Logistics has a twofold impact on national and regional economies. First, it is one of the major costs for enterprises, affecting and affected by economic activities. It enhances efficiency in supply-chain activities and lowers the transaction cost and time between producers or between suppliers and customers. Second, logistics supports the movement of economic transactions; it is an important aspect of facilitating the sale of goods and services (Grant et al., 2005). It connects business activities, links centres with peripheries, and helps distribute the benefits of economic growth regionally (Yean and Basu-Das, 2018a).

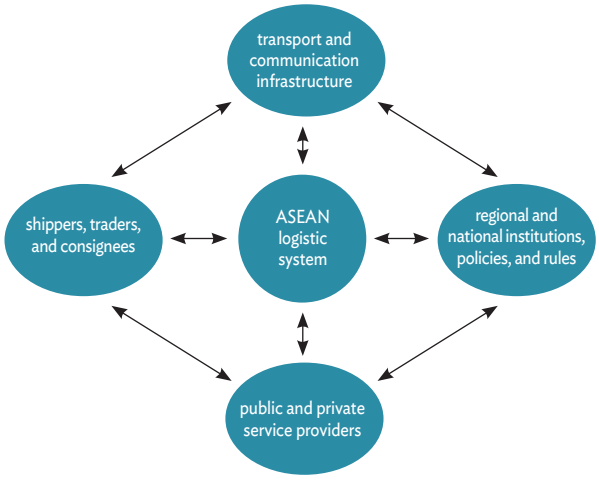
Logistics has an international character because it is related to cooperation between companies in different countries. It requires managers to understand resource capabilities and the complex environment in which government actors play a prominent part (Banomyong, Cook, and Kent, 2008). Logistics is especially important for export-dependent countries whose economic growth and sustainability rely on international trade (Tongzon and Cheong, 2014). Logistics is crucial to making countries competitive exporters: the export of logistics services that are currently and potentially internationally competitive can help promote overall export performance and improve the region's international competitiveness in the export of goods. The logistics service industry, especially, can be supported by policies to develop and improve its competitiveness. For example, logistics is considered a pillar of the ASEAN Economic Community (AEC), which is characterised by the free flow of goods and services across ASEAN members (Tongzon and Cheong, 2014).

Logistics enterprises provide transport, forwarding, and storage services; support logistics processes; take part in the exchange of things and information between market players; and contribute to value creation of company processes and products and to the development of supply chains by ensuring effective indirect links (Gadde, Huemer, and Håkansson, 2003). Logistics service providers are part of a network of relations where they usually play a supportive role (Skjoett-Larsen, 2000).

Logistics services allow goods to flow amongst market actors, help maintain or create workplaces, and significantly contribute to the gross domestic product (GDP). Logistics is 'the bloodstream' and basis of economic development (Huang et al., 2015). Logistics services play a coordinating and integrating role because they directly affect the object – the production of things. This industry is also referred to as the 'engine' of economic development, as logistics services increasingly create opportunities for and contribute to the development of many economic sectors such as courier, express, and parcel services, which have long helped develop distribution and retail businesses, especially online retailers. Without them, express delivery of products to different parts of the world would be impossible.

The logistics system in ASEAN is composed of four key elements - infrastructure, service providers, institutional framework, and shippers, traders and consignees, as shown in Figure 4.1. Their combined effort to a great extent reflect the level of integration of the ASEAN logistics system and will influence the general quality and therefore international competitiveness of ASEAN logistics services. (ADB, 2007; Banomyong, Cook, and Kent, 2008).

**Figure 4.1:** A Framework of ASEAN Logistics System




ASEAN = Association of Southeast Asian Nations.
Source: The author. Based on Adhiarna (2017).

## 3. Logistics Support for E-commerce

The approach to logistics has considerably changed as a result of the emergence of Internet technologies in business (Yean and Basu-Das, 2018a; OECD and UNCTAD, 2017). On the one hand, the Internet has eliminated intermediary links in the supply chain and, on the other hand, new sales and distribution channels have been created. The central focus of interest has been moved to the final customer placing the order at any location and time. The route to the store has been replaced with home delivery. After online sales appeared, the customer became an integral part of the logistics process and, often for the first time, dealt with logistics services.

Initially, the Internet was mainly used for business-to-business (B2B) cooperation. At present, more people got to know about e-commerce because of the fast growth of business-to-consumer (B2C) transactions. The philosophy of the traditional sale is different from that of the online sale. In the first case, the retailer sells a product that is available on the shelf, whilst in the latter, a specific promise of order fulfilment is offered. Typically, online customers want not only the product itself but also real-time information about delivery, simplified and free returns of goods, and flexible and fast delivery (Chen, 2017c). If the product fails to arrive on time or is damaged, or the driver's service is inadequate, the customer may not buy from the store again. Logistics is therefore undoubtedly important for present-day enterprise. Apart from supporting the processes of planning, organising, and monitoring the flow of goods and information about them, logistics integrates and interconnects business entities.

Different sales and distribution channels have helped create many ways to complete the whole order process – starting from product search, to purchase, payment, testing, collection, and return. Businesses are trying to combine all these channels so that traditional and electronic commerce can complement each other. This has given rise to omnichannel or multi-channel integrated trade. It is a response to the growing use of the Internet in everyday life and the customers' smooth 'switch' between the real and the virtual worlds. Within this concept, models of customer behaviour such as ROPO (research online, purchase offline) and ROTOPO (research online, test offline, purchase online) have been developed. In ROPO, the customer looks for a product on the Internet and then buys it from a brick-and-mortar shop. In reverse ROPO (research offline, purchase online), the customer first checks the product at a traditional outlet and then purchases it online. In ROTOPO, the customer searches for the goods on the Internet, then tests them (e.g. tries clothes on) in the shop or showroom, and finally buys them over the Internet.

Besides door-to-door delivery, the customer can pick up the shipment at a PUDO (pick up, drop off) point, a self-service terminal (e.g. parcel lockers), or a brick-and-mortar store. Purchased goods may be returned in a similar way. Payment for purchases can be made during the fulfilment of the order but also upon collection of the shipment from the courier (cash on delivery) or the self-service terminal. In most online shops, the buyer has a choice. The customer decides on the method of purchase, testing, reception, and payment, thus creating the value of his or her product. This has a major impact on the supply chains being set up, which are more and more often configured for individual transactions. If this is combined with fast-growing cross-border trade, where consumers around the world buy billions of products from different countries every day, a complex network of links is created. Each of us can thus be the creator of logistic processes (Kawa and Zdrenka, 2016).

## 4. Logistics Connectivity

Connectivity is the cornerstone of e-commerce development (Chen, 2017c). To ASEAN, creating seamless connections to support e-commerce development is still a big challenge.

By definition, connectivity is related to the quality, state, or capability of being connective or connected (Merriam-Webster Dictionary, 2018). The World Trade Organization defines connectivity as a construct that relies on various dimensions that can be grouped into three categories: geography, infrastructure, and cost-effectiveness (including marginal costs and weight-to-value issues) (OECD and UNCTAD, 2017). This term is often used in documents such as the ASEAN Economic Community Blueprint 2025 (ASEAN, 2015a), the ASEAN

Strategic Transport Plan 2011–2015 (ASEAN, 2010), the ASEAN ICT Masterplan (ASEAN, 2015b), and, especially, the Master Plan on ASEAN Connectivity 2025 (ASEAN, 2016). It is worth noting that connectivity is not merely about roads, bridges, or other transport routes but also about a larger canvas that consists of physical, institutional, and people-to-people components (Das 2016) (Table 4.1).

**Table 4.1: Three Components of Logistics Connectivity**

| Physical | Institutional | People to People |
|---|---|---|
| • Hard framework' for transport, warehousing, distribution, etc.<br>• Air, road, rail, maritime (including inland waterway) industries<br>• Logistics service facilities (e.g. maritime, inland, dry ports)<br>• Information and communication technology<br>• Inter- and multimodal infrastructure and transport | • 'Soft framework' for transport, warehousing, distribution, etc.<br>• Rules and regulations on imports and exports<br>• Customs procedures<br>• Registration and licensing of logistics service providers<br>• Border management capabilities | • Labour market<br>• Formal and informal relations<br>• Promotion of deeper social and cultural understanding<br>• Educational opportunities<br>• People mobility |

Source: The author, based on Das (2016).

All elements of these three components are critical to e-commerce development because they influence its value chain, especially value for the customer. E-commerce connectivity has four parts (Chen, 2017a):

- smooth exchange of data and information (information flow),
- delivery of goods and services (logistics),
- payment (cash flow), and
- seamless links between the virtual and physical part of the e-commerce network.

Logistics is crucial to e-commerce connectivity, as confirmed by the AEC Blueprint 2025 (ASEAN, 2015a) and other aforementioned ASEAN documents, which identify logistics as a priority for integration. Because logistics cuts across multiple sectors in terms of the types of services needed and the four different modes of transportation (road, rail, air, sea), integrating logistics is difficult and long term (Yean and Basu-Das, 2016). The links between all those components can help make the ASEAN region more competitive, inclusive, and cohesive. Greater connectivity allows more support for the political-security, economic, and socio-cultural pillars of an integrated ASEAN community (ASEAN, 2016).

Wei and Sheng (2018) point out that connectivity is changing the face of business in Asia and the rest of the world. It is evident that efficient logistics can enhance competitiveness and increases a country's capability to liberalise its market. For example, a 20% faster clearance of imports and exports can increase ASEAN's cumulative GDP growth rate from 0.2% to 1.5%, and a 10% improvement in customs clearance and logistics competencies can raise

intra-ASEAN trade by 15%. A 10% improvement in domestic competition and government efficiency can lead to 24% growth in intra-ASEAN trade (Yean and Basu-Das, 2016).

ASEAN prioritises logistics integration in the Roadmap for the Integration of Logistics Services (RILS) signed in 2008 as part of its effort to promote regional connectivity. However many planned measures remain in progress because of the loose time lines for logistics facilitation and the noncommittal language used in the roadmap (Yean and Basu-Das, 2016). For example, the nine protocols of the ASEAN Framework Agreement on the Facilitation of Goods in Transit are in varying stages of ratification. In the other cases, ratification has not started because domestic laws have not yet been enacted to support it. The ASEAN Framework Agreement on the Facilitation of Inter-State Transport has been ratified by Cambodia, the Lao PDR, the Philippines, Thailand, and Viet Nam, whilst the ASEAN Framework Agreement on Multimodal Transport has not yet been ratified by Cambodia, Myanmar, the Lao PDR, the Philippines, Thailand, and Viet Nam. The ratification problem is linked to many other issues, such as the different stages of development of ASEAN members, their different attitudes towards change, amongst others. The next sections are devoted to these issues.

## 5. Impediments to and Inequalities in Logistics Connectivity

In doing business, logistics companies need access to public infrastructure such as roads, railroads, ports, airports, and telecommunications. Without good quality and interconnected infrastructure, it will be difficult to provide efficient and effective delivery service, even for the very well organised companies.

In e-commerce, the time and cost of delivery are crucial. Transport services, which move goods from the seller to consumer sites, must be cost-effective, reliable, and quick. Some of the biggest impediments are fragmented roads. For example, the Trans-Asian Highway is still under construction and whilst some parts of it have been built, critical links are missing (Cottrill and Singh, 2011). Development of highway systems has lagged although the number of vehicles has doubled over several years in countries such as Indonesia and Viet Nam. Rail, maritime, and air transport infrastructure is of poor quality (Yean and Basu-Das, 2016). Unsuitable infrastructure is a major reason for inefficient and uncompetitive logistics (Tongzon and Cheong, 2014).

In general, the ASEAN logistics industry is fragmented and immature, when compared to those in the European or the United States markets. Internationally the market is normally led by big foreign logistics service providers with experience and worldwide reach, but

domestically it is also populated by many local transport and forwarding companies that are in their infancy and do not have much resources. When the delivery takes long time (due to problems such as low speed transportation and frequent traffic jams), operations cost gets higher (because of the compensation for longer working hours and various informal charges) (Cottrill and Singh, 2011). The delivery cost of a product ordered online differs significantly by country. For example, delivery of a medium-sized parcel (2 kilograms, 30 x 20 x 10 centimetres) from Yogyakarta to Medan in Indonesia (1,800 kilometres in a straight line) costs IDR76,492 (US$5.74) but BND36.92 (US$27.86) from Seri Begawan to Seria in Brunei (75 kilometres in a straight line) (DHL, 2018). A 40-foot dry container in Indonesia in 2012 cost US$415 but only US$178 in Singapore (Anas, 2016).

Policy formulation and implementation are difficult, often due to different transportation modes and many subsectors governed by many ministries and agencies. For example, Myanmar and Cambodia have several government agencies responsible for developing policy for logistics companies – the ministries of trade and entrepreneurship, foreign investment boards, customs, and others (Yean and Basu-Das, 2016).

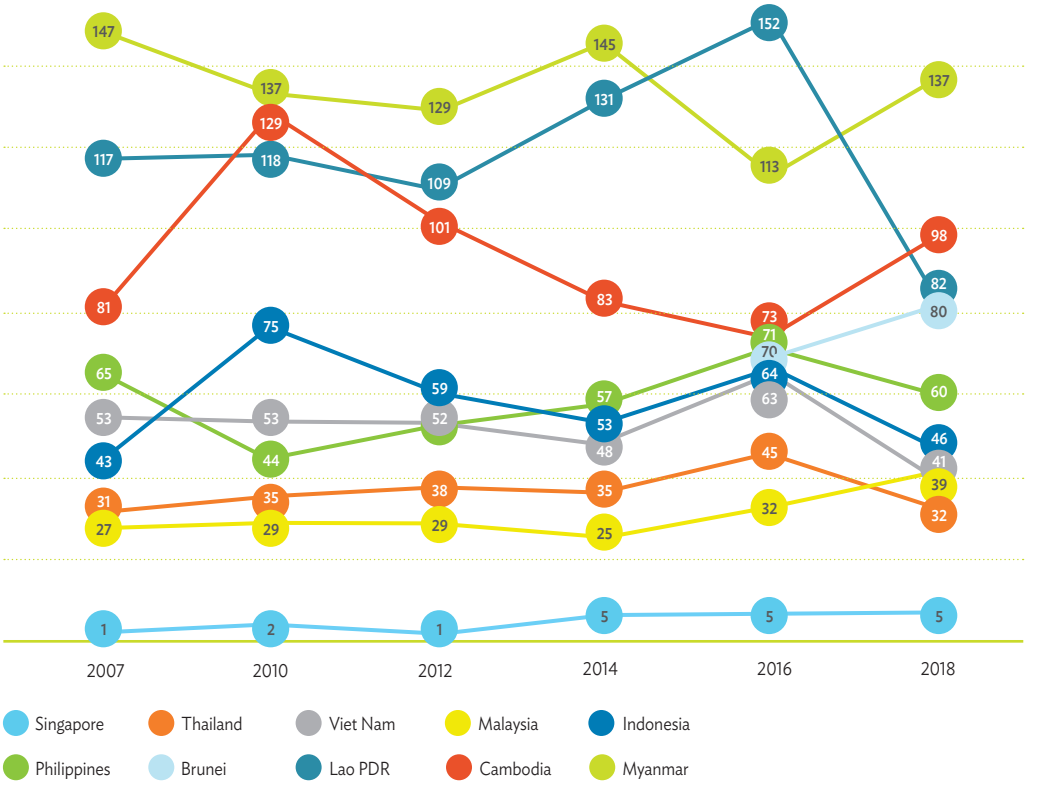
Another problem is that data about logistics infrastructure and industry in the ASEAN countries is lacking, incomplete, or obsolete, particularly about the number of enterprises, their turnover, market structure, performance, costs, and employment (Yean and Basu-Das, 2016). Data banks in most ASEAN member countries are not centralised and the methods used to collect and present data are not standardised, which makes comparisons impossible.

Infrastructure development varies across the ASEAN region, as well, as demonstrated by the logistics performance index (LPI),[1] an interactive benchmarking tool created by the World Bank (2019) to help countries identify the challenges they face in trade logistics and what they can do to improve their performance. Data was collected from surveys of logistics professionals who were asked about the foreign countries where they operated. The studies were carried out in 2007, 2010, 2012, 2014, 2016, and 2018 (Figure 4.2). The LPI from 2018 included scores of 167 countries in the aforementioned dimensions (World Bank, 2019).

[1]The LPI consists of such components as the following: (i) Customs (efficiency of the clearance process by border control agencies), (ii) Infrastructure (quality of trade- and transport-related infrastructure), (iii) International shipments (ease of arranging competitively priced shipments), (iv) Logistics competence (competence and quality of logistics services), (v) Tracking and tracing (ability to track and trace consignments), and (vi) Timeliness (shipments reach destination on schedule).

Singapore is a strong leader in logistics (World Bank, 2019). It ranks 5th in the LPI amongst 167 countries, meaning it has an efficient clearance process, very good quality of trade- and transport-related infrastructure, competent logistics services, and timely shipments. Thailand is also relatively well developed (ranked 32nd). The worst logistics infrastructure is in Myanmar (ranked 137th) (Table 4.2). Countries have unequal logistics quality as well as varying commitment to liberalisation. They often use protectionist policies that constrain business, and often treat information and communication technology (ICT) as less important infrastructure and do not invest in its development.

**Figure 4.2: Logistics Performance Index Ranking in ASEAN Countries, 2007–2018**




ASEAN = Association of Southeast Asian Nations.
Source: Author, based on World Bank (2019); logistics performance index ranking for Brunei since 2016.

**Table 4.2:** Logistics Performance Index Ranking and Its Components of ASEAN Countries, 2018

| Country | LPI Rank | LPI Score* | Customs* | Infra-structure* | Inter-national shipments * | Logistics compe-tence * | Tracking and tracing* | Timeli-ness* |
|---|---|---|---|---|---|---|---|---|
| Singapore | 5 | 4.00 | 3.89 | 4.06 | 3.58 | 4.10 | 4.08 | 4.32 |
| Thailand | 32 | 3.41 | 3.14 | 3.14 | 3.46 | 3.41 | 3.47 | 3.81 |
| Viet Nam | 39 | 3.27 | 2.95 | 3.01 | 3.16 | 3.40 | 3.45 | 3.67 |
| Malaysia | 41 | 3.22 | 2.90 | 3.15 | 3.35 | 3.30 | 3.15 | 3.46 |
| Indonesia | 46 | 3.15 | 2.67 | 2.89 | 3.23 | 3.10 | 3.30 | 3.67 |
| Philippines | 60 | 2.90 | 2.53 | 2.73 | 3.29 | 2.78 | 3.06 | 2.98 |
| Brunei | 80 | 2.71 | 2.62 | 2.46 | 2.51 | 2.71 | 2.75 | 3.17 |
| Lao PDR | 82 | 2.70 | 2.61 | 2.44 | 2.72 | 2.65 | 2.91 | 2.84 |
| Cambodia | 98 | 2.58 | 2.37 | 2.14 | 2.79 | 2.41 | 2.52 | 3.16 |
| Myanmar | 137 | 2.30 | 2.17 | 1.99 | 2.20 | 2.28 | 2.20 | 2.91 |

*Rated from 1 (very low or very difficult) to 5 (very high or very easy).
ASEAN = Association of Southeast Asian Nations; LPI = logistics performance index.
Source: Author, based on World Bank (2019).

Table 4.2 shows the disparities in levels of logistics connectivity amongst ASEAN members. The World Economic Forum studied the infrastructure competitiveness of the ASEAN members and revealed great differentiation between them. It would be worthwhile to find out the reasons for these differences. Many ASEAN countries still suffer from poor infrastructure quality. Another issue is efficiency of clearance by border control agencies.

Table 4.3 shows the main problems related to logistics connectivity and strategic plans or actions to reduce these problems, based on an in-depth review of reports and articles.

**Table 4.3:** Logistics Connectivity in ASEAN Countries – Problems and Actions

| Country | Problems | Plans / Actions |
|---|---|---|
| Brunei | • Only focuses on transport (especially land) without master plan for logistics<br>• No domestic containers (freight is carried in break-bulk form)<br>• Relatively little data on logistics service industry | • Land Transport Master Plan |
| Cambodia | • No domestic containers (freight is carried in break-bulk form)<br>• Inefficient investment licensing system, weak rule of law and regulatory weakness, and poor infrastructure that deters foreign investment<br>• Only 10% of roads are paved (the least amongst all ASEAN countries)<br>• Very low quality of railroad infrastructure (only two lines, in very poor condition, with trains operating at about 20 km/h)<br>• Low quality of maritime transport (constrained port capacity; only two main ports can handle international shipments)<br>• Lack of pure air freighter services<br>• Lack of professionals and management staff with relevant international experience<br>• Limited ability of local companies to offer higher value-added services such as track-and-trace and inventory management | • National Logistics Council set up in 2018 to formulate the country's first-ever national logistics blueprint, as well as coordinate government ministries, agencies, institutions, and industry players<br>• Upgrade inter-provincial traffic routes between the capital and other main cities, and cross-border road links from Phnom Penh to Bangkok in Thailand and Ho Chi Minh City in Viet Nam<br>• Prioritise improvement of connectivity between urban and rural areas |

| Country | Problems | Plans / Actions |
|---|---|---|
| Indonesia | • Low integration at the local and national levels (between islands)<br>• Relatively high logistics cost due to archipelagic geography<br>• Lack of clarity over the most important commodities<br>• Poor state of infrastructure<br>• Poor human capacities in the logistics industry<br>• Limited use of information and communication technology<br>• Regulatory barriers and lack of institutional coordination and capacity<br>• Shortage of trained professionals and lack of on-the-job training in small and medium-sized enterprises (SMEs) in the logistics industry | • Indonesian National Logistics Blueprint as a roadmap for industry development by government, local and provincial authorities, and the private sector<br>• Develop and expand logistics infrastructure, capacity building for actors and providers of logistics services to connect the national logistics system to the ASEAN logistics network<br>• Strengthen the national logistics system and connect it to the global logistics network |
| Lao PDR | • Sole landlocked and least developed country in ASEAN<br>• Low quality of roads, railroads, and air infrastructure<br>• Difficulty in re-investing due to financial limitations of transport and logistics companies<br>• Lack of transport and logistics hub<br>• Inadequate resources for infrastructure investment and maintenance<br>• Weak logistics coordination mechanism<br>• Limited logistics statistical data<br>• Poorly integrated regional logistics<br>• Low quality of institutions (political instability, corruption, weak rule of law, difficulty in doing business)<br>• Lack of pure air freighter services | • Focus on dry-port development and land connectivity with neighbouring countries |
| Malaysia | • Congested road network<br>• Track and trace only partly implemented<br>• Poor customs service (inefficient clearance process by border control agencies) | • Third Industrial Plan for 2006–2020, including logistics as a priority industry to improve infrastructure, allow in foreign shipping companies and logistics service providers, encourage domestic industry to participate in global supply chains by applying new technology, create an efficient and competitive logistics industry |
| Myanmar | • Low investment in licensing system, weak rule of law and regulatory weakness, poor infrastructure deterring foreign investment<br>• Low quality of institutions (political instability, corruption, weak rule of law, difficulty in doing business)<br>• No domestic containers (freight is carried in break-bulk form)<br>• Shortage of trained professionals and lack of on-the-job training in SMEs in the logistics industry<br>• Lack of pure air freighter services | • National Transport Master Plan<br>• Scheduled improvement of rail links from Yangon to Mandalay with Japanese financial assistance<br>• Improve maritime connectivity with China, India, and the Indochina region through foreign direct investment in port development<br>• Implement new investment law drafted with the assistance of the World Bank |
| Philippines | • Poor customs service (inefficient clearance process by border control agencies)<br>• Low quality of infrastructure<br>• Partly implemented track and trace<br>• Unsafe and unpunctual delivery of goods during the rainy season<br>• Heavy traffic<br>• Limited cargo capacity of provincial airports<br>• High logistics costs<br>• Low logistics performance | • National Logistics Masterplan to improve competitiveness by reducing logistics costs and enhancing the country's ranking in the World Bank's annual logistics performance index<br>• Increase infrastructure spending as a priority<br>• Focus on increasing investment to modernise airports, seaports, and a roll-on-roll-off maritime transport system to improve connectivity between the numerous islands |
| Singapore | • Relatively insufficient international shipments<br>• Management of logistics sector spread across multiple agencies<br>• Inadequate urban logistics ensuring smooth and efficient operations<br>• Continuously grappling with increasing overheads, driver shortages, and need for timely delivery by logistics companies | • Productivity Roadmap of Transport and Logistics Industry; Land Transport Master Plan 2030; Air Transport Industry Transformation Map 2025; Maritime Plan; Smart Nation Initiative with transport as one of the focus areas<br>• Upgrade and modernise infrastructure, especially using ICT services |

| Country | Problems | Plans / Actions |
|---|---|---|
| Thailand | • Domination of land transport by road network<br>• Relatively small role of rail in freight services<br>• High logistics costs due to the cost of transport<br>• Decentralised and fragmented government administration (each agency pays attention to its own priorities and tends to lack a cohesive and strategic framework)<br>• Lack of regulatory coordination | • Strategy on Logistics for the Kingdom of Thailand<br>• Thailand's Eleventh National Economic and Social Development Plan to improve infrastructure and transport systems, connectivity between Bangkok and the provinces and with neighbouring countries, strengthen transport efficiency through investments in hardware and software, develop and finance improvements in infrastructure and logistics systems through public–private partnerships<br>• Promote rail transport, including improvement of infrastructure and reorganisation of the State Railway |
| Viet Nam | • Low quality of infrastructure<br>• Lengthy customs processes<br>• Inadequate transport infrastructure<br>• User-unfriendly logistics facilities such as warehouses and container freight stations (often stand-alone and far from ports and manufacturing plants)<br>• Congestion causing delivery delays and increasing transportation costs<br>• Shortage of trained professionals and lack of on-the-job training in SMEs<br>• Lack of central coordinating agency<br>• No domestic containers (freight is carried in break-bulk form)<br>• Lack of pure air freighter services | • Master Plan to develop logistics sector over the next 8 years<br>• Prioritise improvement of connectivity with production centres; improve road safety and quality<br>• Enhance internal connectivity with production centres |

ASEAN = Association of Southeast Asian Nations.
Source: Author, based on ADB (2017); Banomyong (2010); Ernest (2018); ESCAP (2013); HKTDC (2015); JII (2018); Phandanouvong (2016); Portcalls (2017); Raza (2014); Wagner and Bode (2009); Yean and Basu-Das (2016, 2018a, 2018b).

The presented e-commerce logistics connectivity impediments and inequalities can be divided into public infrastructure, logistics industry, economic and non-economic differences, and standardisation (Table 4.4).

**Table 4.4: Main Impediments to Logistics Connectivity in ASEAN**

| Aspect | Main Impediments |
|---|---|
| Public infrastructure | • Low quality of roads, railroads, ports, airports, and telecommunications<br>• Non-interconnected infrastructure |
| Logistics industry | • Dominated by foreign logistics service providers<br>• Local transport and forwarding companies without enough resources<br>• Service price disparities<br>• Incomplete and obsolete market data |
| Policy development | • Red tape<br>• Too many complex rules and regulations<br>• Logistics services cutting across many ministries and agencies<br>• Blurred responsibilities |
| Economic and non-economic differences | • Economic disparities (e.g. logistics and express delivery penetration, different currencies and level of bankability)<br>• Non-economic disparities (e.g. cultural differences, social trends, generation gaps) |
| Standardisation | • Lack of interoperability (IT systems, loading units, consignment labels)<br>• Lack of standardised interface specification to exchange data and to harmonise labelling<br>• Lack of track & trace services |

ASEAN = Association of Southeast Asian Nations.
Source: Author.

Individual ASEAN members try to deal with their low quality of logistics. For example, in 2015, the Malaysian government announced that it would improve its logistics performance index ranking from 25th to amongst the top 10 in 2020 and become the preferred logistics gateway to Asia (NST, 2015). This plan was highly ambitious but failed completely, with Malaysia falling to 32nd position in 2016 and 41st in 2018.

The low efficiency in some countries affects the region's overall efficiency, and especially has an impact on the more logistically advanced countries. Even well-developed national infrastructure cannot cope with poor logistics connectivity of the whole region. Some countries are attempting to improve the situation but it is difficult. For example, logistics service providers are amongst the most rapidly developing sectors in Singapore. But when Singaporean companies want to tie up with companies in neighbouring countries, governments are reluctant to allow capital flow.

Foreign investors could play a vital role in logistics connectivity. Recently, Chinese tech-related investments and initiatives have significantly changed Southeast Asian e-commerce. The big players such as Alibaba and JD.com provide capital and know-how, and overcame inequalities and logistical impediments, too.

Alibaba is the biggest stockholder in Lazada, a large Southeast Asian e-tailer consisting of more than 145,000 local and international sellers and 3,000 brands from Indonesia, Malaysia, Thailand, Viet Nam, and the Philippines (McDonald, 2018).[2] The Chinese giant will open a distribution hub in Thailand's Eastern Economic Corridor, which will be dedicated to products shipped to and sold in China (Ono, 2018). Another example of Alibaba's commitment to improving logistics connectivity is the Digital Free Trade Zone in Malaysia, a joint project between the Malaysian government and the municipal authorities in Hangzhou, China. The zone is intended to simplify cross-border e-commerce and put Malaysia's SMEs on the 'digital silk road' (Yean, 2018). Jack Ma, Alibaba's co-founder and executive chairman, advises the government on developing a virtual and physical economic space in Kuala Lumpur International Airport (Ono, 2018). Richard Liu, founder of the second biggest e-marketplace in China – JD.com – recently announced his goal of generating half of JD.com's revenue outside China within 10 years, and the Southeast Asian market is one of his main targets (Spencer, 2018). JD.com recently made a large investment in the Vietnamese B2C e-commerce platform – Tiki.vn (Harris, 2018) – which is known for its unique TikiNow service (2-hour delivery) (Tiki, 2018).

[2] By the end of 2017, Alibaba held 83% of Lazada, increasing by US$1 billion from the previous year. In 2018, it announced an additional increase of US$2 billion (Choudhury, 2018).

The ASEAN e-commerce market is also propelled by local start-ups such as Go-Jek, Ninja-Van, Deliveree, and aCommerce, which try to make online shopping easy by providing logistics services such as fulfilment, delivery, and solving the last-mile logistics problem (Sathirathai and Wan, 2018). Unquestionably, their activities and investments contribute to improving logistics connectivity and, consequently, can lead to cost reductions and improved service quality (Competition Commission Singapore, 2017). They also encourage other companies to expand their business or to enter this market (Balea, 2016). They observe each other's moves and power each other to expand further. Probably for this reason, Amazon signed a deal with the Vietnam E-Commerce Association (VECOM), a group of 140 local online businesses. Such cooperation with external merchants might be the precursor of Amazon's entry into the Vietnamese market with a full range of offers. The company has taken similar steps in Australia and Brazil. Amazon is also present in Singapore, where it has provided new services such as Amazon Prime since 2017 (Sathirathai and Wan, 2018).

## 6. Policy Recommendations

### 6.1. Liberalisation and Facilitation Measures

In the next few years, ASEAN should endeavour to liberalise and facilitate logistics integration. Many strategic plans support these initiatives but much still has to be done to fully implement the RILS. Air, land, maritime, including sustainable, transport should be integrated (Yean and Basu-Das, 2016) and the highest priority given to developing infrastructure and reducing bottlenecks (A.T. Kearney, 2015).

Above all, the region's complexity and diversity must be considered (Das, 2016). Singapore is different from Indonesia, the Philippines is different from Thailand and Myanmar, and so on. As members of the World Trade Organisation (WTO), all ASEAN countries must follow WTO rules, e.g. on customs valuation. Not all WTO valuation rules are implemented, however, and existing or planned best practices should be implemented under the RILS rather than additional, overlapping regulations created. Navigating complex regulatory environments and dealing with a range of authorities require financial and personnel resources from companies (Banomyong, Cook, and Kent, 2008).

The high cost of complying with institutional regulations and documentary processes is one of the biggest impediments to logistics efficiency. All ASEAN countries must prioritise reducing costs, especially for export processing. In the short term, ASEAN governments may lose revenue but facilitation measures eventually increase the volume (and the total value) of export transactions. The Economic and Social Commission for Asia and the Pacific (ESCAP, 2015) estimated that tariffs account for less than 10% of bilateral trade costs, whilst other policy-related trade costs (not tariffs) account for 60%–90%. In the long term, decreasing

export-processing costs will not only reduce total export logistics costs but also make ASEAN more competitive globally (Banomyong, Cook, and Kent, 2008).

Broadband Internet connection, access to the Internet, and advanced payment solutions are amongst the preconditions for full participation in e-commerce. The World Bank draws attention to the importance of the 'middle mile', which requires liberalising markets to build and operate backbone networks and encouraging open access. Developing these networks is contingent not only on soft infrastructure but also on hard infrastructure – roads, railways, and so on. Governments should therefore adopt comprehensive solutions that encourage entrepreneurs' innovation. Harmonising regulations between ASEAN countries to boost cross-border e-commerce is especially crucial and can be achieved by utilising proposals and plans already developed in numerous ASEAN documents (Suhud, 2017).

E-commerce logistics services must become more efficient, and bottlenecks must be removed. A maritime connection, for example, requires efficient hinterland services. The complexity of connectivity needs to be considered to optimise the gains from investment in infrastructure. To avoid bottlenecks, particularly in landlocked countries (e.g. Lao PDR), and maximise the benefits requires coordination between neighbouring countries. Digitisation can reduce the costs of such coordination and promote better connections between different transport modes and regional logistics services (OECD, 2017). There is a strong positive correlation between infrastructure improvements and trade facilitation in neighbouring countries and greater value chain connectivity at home (Shepherd, 2015).

### 6.2. Infrastructure Improvement

Logistics and trans-shipment centres are a crucial segment of logistics connectivity. Such centres bring together interconnected companies that often compete but also cooperate with each other, as well as specialised suppliers and service providers. They are based on a hub-and-spoke system, which connects the logistics centre of a country or region with others. Improved connectivity generates income for the centres' service providers as well as for domestic suppliers and customers, who benefit from more frequent and less costly services from and to overseas markets and providers (OECD and UNCTAD, 2017).

Maritime transport is an example of the use of the hub-and-spoke system. It is the most important mode of transport in international trade and accounts for 80% of volume and 70% of value, and even more for developing countries (UNCTAD, 2016). Goods are mostly shipped in standardised containers through a global network of regular shipping liner services.

Containerisation has been one of the most significant innovations in trade logistics (Bernhofen et al., 2016). Containers can be used in different modes of transport and facilitate and accelerate loading and unloading. ASEAN members should use containers

widely for internal freight transport. However, Brunei, Cambodia, Lao PDR, Myanmar, and Viet Nam do not have such domestic containers, and domestic cargo is transported in the form of break-bulk. The benefits of using containers, particularly in e-commerce logistics, should be demonstrated.

Railroads are one of the weakest links in ASEAN logistics infrastructure because of high access charges, excessive transit times, poor service, poor scheduling, and unreliability. Rail can be an efficient interface between maritime and land transportation, but improving rail is difficult and complex. It requires cooperation amongst stakeholders and the management of capacity, schedules, shipments, origins, and destinations. Policy guidelines should enable solving problems related to double tracks and dedicated track for freight services, centralised or advanced train control systems, trains longer than 50 wagons, and wagons capable of carrying more than 80 tons (Banomyong et al., 2008).

Roads are amongst the most frequently used modes of transport, particularly for domestic traffic. They are relatively easy to develop and less capital intensive. The quality of road infrastructure in ASEAN is uneven (section 5) and individual countries must harmonise and standardise their specifications. Not only paved roads but also multilane dual carriageways and highway networks are necessary to accelerate e-commerce development. The greatest problem is in Cambodia, Lao PDR, Myanmar, and Viet Nam (CLMV), where road infrastructure lags behind that of other ASEAN members. CLMV must not only invest in road development but also solve traffic jams, reduce exhaust emissions, and promote safety by reducing cargo and axle load limits, using articulated trucks, and enforcing roadworthiness certificates (Banomyong, Cook, and Kent, 2008).

Air transport connectivity is crucial to cross-border e-commerce. If customers want quick delivery, they should be ready to pay more. Air transport connectivity is characterised by point-to-point transport services: cargoes are directly delivered, minimising trans-shipment. Air transport combines cargo and passenger services. It is also the most expensive mode of transport (OECD, 2017). Pure players in air transport services are therefore not popular in ASEAN, particularly in CLMV. It is worth considering the development of existing airports to function as air freight hubs, as well. This would require many facilities such as on-site operations at airports and cargo villages; possibility of cold, dangerous storage; competitive ground handling; quick clearance and electronic data interchange for cargo manifests; and large pallet scanners that facilitate the examination of freight (Banomyong, Cook, and Kent, 2008).

The next key component of logistics connectivity is inland waterway transport. It serves mainly domestic traffic, particularly in countries through which the Mekong river passes. Waterway transport is relatively cheap and eco-friendly, but it is neglected. It requires a lot of investment in links to the main seaports, inland waterway port facilities, equipment, ICT systems, container vessels, and container-handling capability (Banomyong, Cook, and Kent, 2008).

Inland waterway multimodal shipping and container-handling capacity should be promoted through integrated logistics policy initiatives (ASEAN–US, 2018). The AEC Blueprint 2025 highlights the crucial need for transport infrastructure integration and inter-modal interconnectivity with principal airports, seaports, and inland waterway and ferry links (ASEAN, 2015a).

Integration and the proposed measures will bring not only challenges but also opportunities. ASEAN members can benefit each another and interact with outside countries. Most ASEAN countries could develop trade, especially e-commerce, with China more quickly. For example, China is Malaysia's number-one trading partner and better logistics connectivity could increase the exchange between them even more. Myanmar could strategically partner with China thanks to the Greater Mekong Subregion (Chua, 2015).

### 6.3. Increasing Standardisation

Hindering the seamless development of e-commerce is the relatively low level of standardisation: different loading units, IT systems, standard service contracts, and consignment labels. The solution is to create systems that allow independent companies to cooperate and enable different information systems to safely exchange data within a predefined structure and mutually use this data to further create information (Kawa, 2012). Many risks can be reduced by eliminating human error and putting in place adequate quality assurance processes. One solution, which improves interoperability, is to use a single, common label on parcels, based on open global standards (e.g. GS1). All handlers of parcels (senders, receivers, couriers, postal companies) would use the same label for all parcels and track their journey from the sender to the consumer (GS1, 2017).

Interoperable systems and harmonised labelling are particularly important for track-and-trace systems and are a prerequisite for a modern logistics system, allowing logistics service providers and their customers to monitor the companies' vehicles and better coordinate business operations. Track and trace can also get complete statistical information about the quality of the services provided and, if necessary, companies may raise their standards. Logistics service providers have a clearly defined system of accountability for delivery and know where the consignment is at every moment. Another huge advantage of transparency in the supply chain is reduced incentives and opportunities for corruption (OECD and UNCTAD, 2015). Unfortunately, only Singaporean and Thai logistics service providers offer full visibility of their freights. Malaysian and Philippine companies have partly implemented track and trace but other ASEAN member countries have not (Banomyon, Cook, and Kent, 2008).

ASEAN should promote the interoperable solutions, especially for e-commerce supply chains, which usually have to deal with a variety of IT systems. Standardised service contracts

are also particularly important. They are used consistently only in Singapore. Using service-level standards and basic rules in contracts will allow logistics service providers and their customers to cooperate more easily, not waste time establishing precise working conditions, and protect all parties (Banomyong et al., 2008).

### 6.4. Encouraging Cooperation

The importance of end customers in logistics will continue to grow. More and more solutions are emerging that allow configuration of the supply chain. Apart from choosing where they can pick their orders up, customers can also choose a convenient time to do so. Deliveries can be changed dynamically more and more often.

Besides technological challenges, there are organisational ones related to seamless cooperation between e-commerce stakeholders (e-tailers, logistics companies, Internet providers, banks) that provide expected value to e-customers. Capacity and resource limits are some of the biggest impediments to logistics connectivity. Enhancing cooperation between enterprises is one solution and is supported by the AEC Blueprint 2025, which calls for transport connectivity, efficiency, integration, safety, and sustainability (Kimura and Chen, 2017). Logistics service providers should share their transport, warehouse, and trans-shipment terminal networks to achieve economies of scale in the form of lower costs, and economies of scope in the form of richer offerings in accordance with the one-stop shopping concept. The largest logistics operators should form groups of partner companies operating under the same brand name.

The following can enhance opportunities for cooperation in e-commerce logistics:

i. Promote joint ventures, clusters, and business networks between domestic companies and with international service providers, in addition to universities, research institutes, amongst others.
ii. Encourage competing companies to create partnerships to exchange knowledge and experience and share their resources to carry out specific tasks.
iii. Encourage logistics service providers to form international alliances and expand operations globally.

Cooperation in logistics has recently become fashionable through the sharing economy, which uses resources outside the logistics services industry with the participation of modern technologies. For example, cars belonging to other companies or private persons are used to transport consignments. Similarly, free storage space is made available. This concept assumes that 'access is better than ownership'. People possessing free resources, shoppers, and online shops all benefit. Customers can simultaneously use and offer services to other market players. These services are being developed mainly in larger cities where direct delivery is

carried out without loading bays. Over time, more advanced solutions may emerge, resulting in even greater community involvement in logistics processes.

It is possible to engage society (e.g. crowdsourcing) to improve logistics connectivity. GO-JEK, an Indonesian technology company, is an excellent example of the crowdsourcing model of logistics. It was established as a motorcycle ride–hailing phone service but has evolved into an on-demand mobile service. Today, it provides a wide range of services that include transportation, logistics, mobile payments, food delivery, and many other on-demand services. GO-JEK (2018) now operates in 50 cities across Indonesia, cooperating with 300,000 drivers. Such new services, however, are often not regulated and can meet opposition from conventional businesses such as taxi corporations. Governments should adopt comprehensive, adaptive solutions that will encourage entrepreneurs to innovate and, at the same time, ensure a sufficient level of regulation (Suhud, 2017).

Another challenge is to collect adequate data on the number of players, market size, industrial structure, trade performance, job creation, and the costs of moving goods. The data banks in ASEAN member countries should be centralised and measurement methods standardised to make comparisons possible.

## 7. Conclusion

E-commerce has not developed uniformly. The most mature markets are China, the US, and some European Union countries. ASEAN e-commerce is still in its infancy but the region has a relatively young population of 640 million, who use social media actively and purchase more and more products on the Internet. ASEAN could potentially be one of the fastest-growing e-commerce markets, whose value may even reach US$89 billion in several years, but it encounters challenges. Apart from the smooth exchange of data and information and seamless payments, logistics is a crucial component of e-commerce.

In traditional trade, the retailer sells a product that the customer sees on the shelf, whilst in e-commerce, the seller offers a promise to fulfil the order. Operationally, e-commerce comes down to supplying e-shops, storing goods, picking, packing, shipping products to customers, and returning them. Logistics is a prerequisite of e-commerce. E-commerce without new logistics solutions would be limited. Neither door-to-door delivery nor PUDO points nor parcel lockers would be possible. The AEC Blueprint 2025 (ASEAN, 2015a) and other ASEAN documents identify logistics as a priority for integration, related to logistics connectivity, which comprises physical, institutional, and people-to-people components.

Thanks to logistics connectivity, e-commerce can work better and create additional value for customers. After all, logistics allows e-tailers not only to attract new customers (by

providing goods and different forms of low-cost delivery) but also to retain those who have already placed an order (by offering on-time delivery of the correct, undamaged goods). The customer has become an integral part of the logistics process and, often for the first time, has dealt with logistics services. E-customers do not want only the product itself but also real-time information about delivery, simplified and free returns of goods, and flexible and fast delivery. Those who win are companies that use new logistics solutions tailored to market needs.

Logistics connectivity is making slow progress in ASEAN and East Asia, mainly because countries have different institutions, infrastructure, and implementation capacities. Unsuitable infrastructure is a major factor behind logistics inefficiency and lack of competitiveness. The ASEAN region has many economic and non-economic differences as well as e-commerce logistics connectivity impediments and inequalities in public infrastructure, the logistics industry, and standardisation.

Some initiatives to improve logistics connectivity have been proposed. The most important ones are summarised in Table 4.5.

The research methods and data analysis initially confirm the proposed hypothesis. Further studies using quantitative methods are needed to test them. Future work will therefore involve empirical research, applying diagnostic surveys based on questionnaires.

**Table 4.5: Measures and Actions Related to Policy Recommendations**

| Measures | Actions |
|---|---|
| Liberalisation and facilitation | • Support integration of air, land, maritime transportation, including sustainable, transport, and transport facilitation<br>• Follow the example of other dynamic economies that have integrated and developed common solutions (e.g. the EU)<br>• Liberalise markets to build and operate backbone networks and encourage open access to the Internet |
| Infrastructure improvement | • Maritime. Use containerisation to facilitate and accelerate the process of loading and unloading the transported goods<br>• Rail. Use double tracks and dedicated tracks for freight services; centralise or upgrade train control systems<br>• Road. Reduce overload of cargo and axle load limits, use articulated trucks, and enforce roadworthiness certificates<br>• Air. Develop existing airports into air freight hubs; perform on-site operations at airports and cargo villages<br>• Inland waterways. Invest in links to main seaports, inland waterway port facilities, equipment, ICT systems, containerisation |
| Increasing standardisation | • Encourage cooperation between separate and independent companies; create interoperable solutions<br>• Use a single, common label on parcels based on open global standards (GS1)<br>• Use service-level standards and basic rules in contracts |
| Encouraging cooperation | • Promote joint ventures, clusters, and business networks amongst domestic companies and with international service providers, in addition to universities, research institutes<br>• Encourage exchange of knowledge and experience, and share resources to carry out specific tasks<br>• Engage society in improving logistics connectivity in the form of crowdsourcing |

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