

【論 文】

A Study on the Actual Situation of Global Supply Chains in ASEAN: Focusing on the Case of Japanese Auto Parts Company A

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1. Introduction

Supply chain management is mainly deployed in the manufacturing industry to link the operations of domestic and overseas bases, properly manage the overall flow, and effectively reduce costs and ensure a rational distribution. Previously, global supply chains were formed around the People's Republic of China (hereinafter referred to as China), which was regarded as “the world's factory.”

However, amidst heightened “China risks,” or political, economic, regulatory, and security risks involved in conducting business with the country, the center of supply chains has been shifting towards ASEAN⁽¹⁾.

At the same time, economic activities are now increasingly becoming globalised in not only the manufacturing sector but also all industries. For example, in the manufacturing industry, multiple countries are involved in the entire process ranging from the procurement of raw materials and components to assembly and processing at production sites and finally consumption activities such as sales and after-sale services.

In light of the recent globalisation of corporate activities and management, it is becoming increasingly difficult to establish a supply chain within a single country. It has thus become important to deploy supply chain management on a global scale to achieve optimisation of all domestic and overseas locations, from the perspectives of visualisation, efficiency, speed, standardisation and cost reduction.

For global supply chains in the manufacturing industry to function properly, the various parties involved must always share up-to-date information on the entire supply chain, from the procurement of materials to the production and sales of products in Japan and overseas.

In recent years, the IT (Information Technology) evolution has enabled organisations involved in a global supply chain to share information among each other. This includes manufacturing companies (shippers), logistics companies, banks, insurance companies, customs offices, and administrative bodies such as import/export and tax management agencies in each country.

The global supply chain model applies not only to the manufacturing industry, which targets goods that are visible to the eye including household appliances, automobiles, beverages, and food, but also to IT and service sectors that offer intangible products.

For example, in the IT sector, the waterfall model involves building a global supply chain. The entire cycle of system development is completed through the collaboration of different companies in different countries each taking on the role of requirement analysis, design (external and internal), development (programming), testing (unit, integration, system, and acceptance testing), implementation, and maintenance.

To date, there have been very few studies both in Japan and abroad on global supply chains in ASEAN. In addition, the scope of research has been limited in previous studies, with many having been written by one researcher rather than encompassing theoretical and empirical studies by many (Saisho, 2017).

This paper focuses on global supply chain initiatives in “mainland ASEAN,” which covers the five countries of The Kingdom of Thailand (hereinafter referred to as Thailand), Socialist Republic of Vietnam (hereinafter referred to as Vietnam), Kingdom of Cambodia (hereinafter referred to as Cambodia), Lao People’s Democratic Republic (hereinafter referred to as Laos) and Republic of the Union of Myanmar (hereinafter referred to as Myanmar), located in the Indochina Peninsula and accessible by land routes. Specifically, it considers the main factors behind establishing an optimal global supply chain and the case of a Japanese auto parts company operating in ASEAN⁽²⁾.

2. Digitalisation of Trade Operations and Global Supply Chain

Recently, trade operations have undergone digitalisation by making full use of cutting-edge technologies such as artificial intelligence (AI), Internet of Things (IoT), big data, and blockchain (e.g., Hyperledger Fabric). At the same time, the volume of trades supporting global supply chains has been rising significantly. However, in complex trade operations, it is becoming increasingly difficult to support sustainable growth due to

a shortage of practitioners and inefficient business processes (Kojima, 2021).

Until now, trade operations supporting global supply chains have been slow to respond to digitalisation, and standardisation. Digitalisation of trade operations was considered impossible due to the vast number of players and the complexity of operations. One solution to this problem that is recently being introduced in many countries is the use of an aggregated trade data platforms to enable each player to share information.

For example, in Japan, the *TradeWaltz* platform is being used to share information among trade participants in varying industries and of different business types, including shippers and import/export companies (factories and production bases), logistics companies (land and maritime transportation companies), banks, insurance companies, customs offices, and import/export and tax management agencies of each country (NTT Data, 2020).

Other trade data platforms in Asia include the *Bay Area Platform* used by the Chinese government, Guangdong Province, Hong Kong Special Administrative Region of the People's Republic of China (hereinafter referred to as Hong Kong), and Macau Special Administrative Region of the People's Republic of China (hereinafter referred to as Macau), *UtradeHub* of Republic of Korea (hereinafter referred to as Korea), *NDTP* (*National Digital Trade Platform*) of Thailand, and *TradeFlat* (formerly *eTradeVN*) of Vietnam, *NTP* (*Networked Trade Platform*) of Republic of Singapore (hereinafter referred to as Singapore), and *eTradeConnect* of Hong Kong.

Trade data platforms can be leveraged in global supply chains that span multiple countries and regions. Such platforms enable visualising, streamlining, expediting, standardising, and reducing costs across a wide range of operations of different parties involved to facilitate smooth trade operations.

In other words, digitalisation has made it possible to automate trade operations through visualisation and enhanced efficiency, which was previously thought to be impossible, enabling comprehensive management of global supply chains that span multiple countries and regions.

In April 2021, major players in trade operations established the “Consortium for Efficiency and Expansion of Trade Information Linkage (Trade Consortium)” in Japan to facilitate cross-sectoral cooperation with the common goal of digitalising trade operations. The Trade Consortium consists of a wide range of companies involved in trade operations, such as manufacturers, trading companies, banks, insurance companies, and logistics companies, as well as other participants⁽³⁾ including IT companies and public institutions.

In December 1974, the Japan Association for Simplification of International Trade Procedures (JASTPRO) was established (and later became a general incorporated foundation in April 2013) under the Ministry of Finance, the Ministry of International Trade and Industry, and the Ministry of Transport, with the support of relevant government agencies, industry groups, and companies. Its aim was to simplify trade-related procedures and contribute to greater operational efficiency (JASTPRO, 2016).

JASTPRO has 36 member organisations involved in trade operations from both the public and private sectors and has been working towards simplify Japan’s trade-related procedures by standardising forms, making proposals towards digitalisation, and publishing the results of surveys and research (JASTPRO, 2016). JASTPRO also acts as the secretariat of the United Nation Centre for Trade Facilitation and Electronic Business (UN CEFAC) and cooperates with relevant international and foreign organisations (UN CEFAC, 2023).

In this way, the recent digitalisation of trade operations has made global

supply chain management possible through the use of trade data platforms (Funai, 2019). The aim of building a global supply chain is not just to reduce costs. By visualising, streamlining, accelerating, and standardising trade operations, each participant can focus on strategic operations in their profit-making departments rather than on back-office administrative work.

In this paper, we will look into a case study of a Japanese auto parts company operating in Thailand to examine the actual deployment of its global supply chain strategy in the country as well as its neighbouring countries. The tier-1 company is a primary supplier that directly delivers parts to automobile companies.

3. Japanese of Auto Parts Company in Thailand and Global Supply Chain

3.1 Tier 1 Supplier and Global Supply Chain

In the automobile industry, tiers refer to a level within the supply chain, with tier 1 being the primary supplier, tier 2 being the secondary supplier, and tier 3 being the tertiary supplier. Tier 1 companies directly supply parts and components to automobile manufacturers such as Toyota, Nissan and Honda (Kawabe, 2011).

In today's information society⁽⁴⁾, tier 1 suppliers are transforming their global supply chain strategies by building internal (or intragroup) systems and utilising trade data platforms. Prior to the advent of the information society, tier 1 suppliers tended to take an approach of "follow the crowd" by deploying similar strategies as their peers and repeating past practices without being able to identify their own competitive edge.

However, through the digitalisation of trade operations, tier 1 suppliers in the ASEAN global supply chain are now able to conduct direct transactions with automobile companies and tier 2 suppliers, as shown in Figure 1. Some tier 1 suppliers have built material procurement and product supply

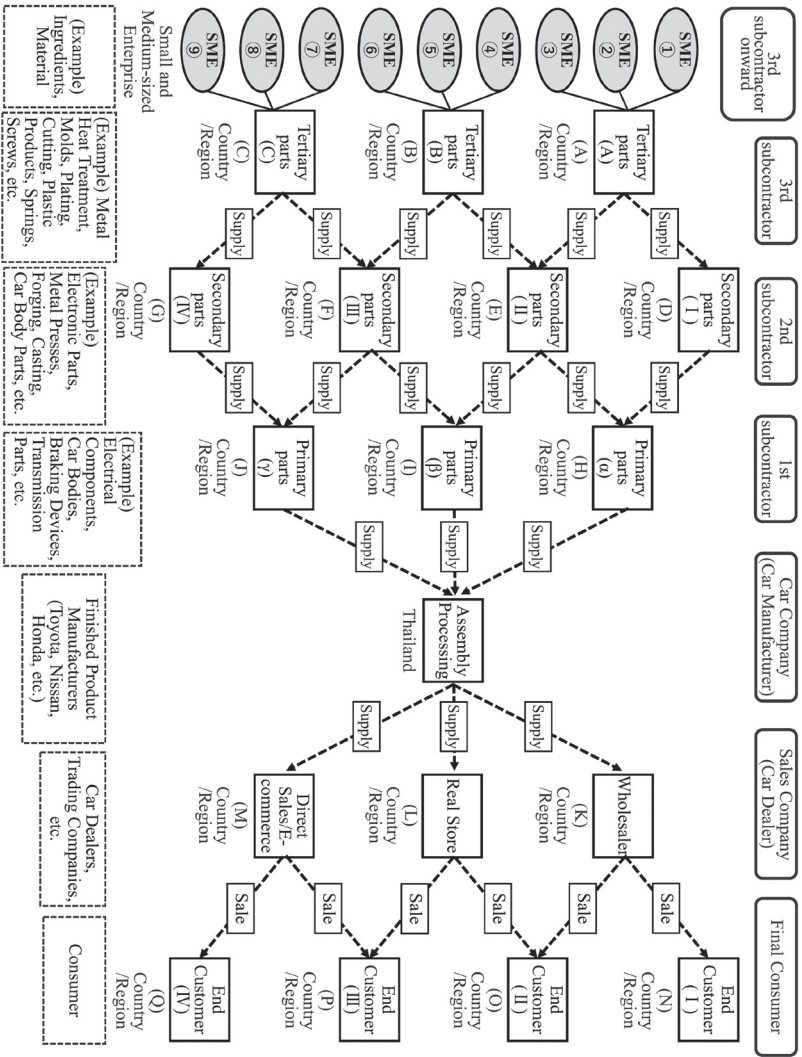


Figure 1: Thai global supply chain processes in the automotive industry

Source: Compiled by the author.

networks that span their own and other companies' production bases.

Tier 1 suppliers are currently undertaking unique management strategies by building distribution networks centered on land transportation between the company and automobile manufacturer (mother factory) or on maritime transportation between the automobile manufacturer and regional headquarters.

This paper examines the case of the global supply chain of tier 1 Large Company A as an empirical study. Company A has more than 40 overseas bases (including regional headquarters and sales companies) in the ASEAN and other regions of Asia, and supplies wiring harnesses (automotive assembly wires) and other components to automobile manufacturers.

Company A was founded as an electrical wire company and has since expanded its business in Japan and abroad with a focus on the manufacturing and sales of wire harnesses. A wire harness is a collective automobile component consisting of multiple bundles of wires, terminals, and connectors used for power supply and signal communication.

Currently, Company A is expanding its business from the manufacturing and sales of automobile components such as wire harnesses and electric wires to instrumentation devices, gas appliances, and air-conditioning and solar thermal equipment.

In addition, Company A's global supply chain in ASEAN is utilising land routes⁽⁵⁾ such as the East-West, North-South, and Southern (2nd East-West) economic corridors shown in Figure 2 to build a logistics network with Cambodia, Laos and other countries, with Thailand serving as the main production base (ADB, 2015; Kato et al., 2016).

Establishing a logistic network between Thailand and its neighbouring countries of Cambodia and Laos allows for end-to-end processes to be completed under the same timeframe as it would in Thailand alone. The largest advantages of using land routes in ASEAN is that transportation is

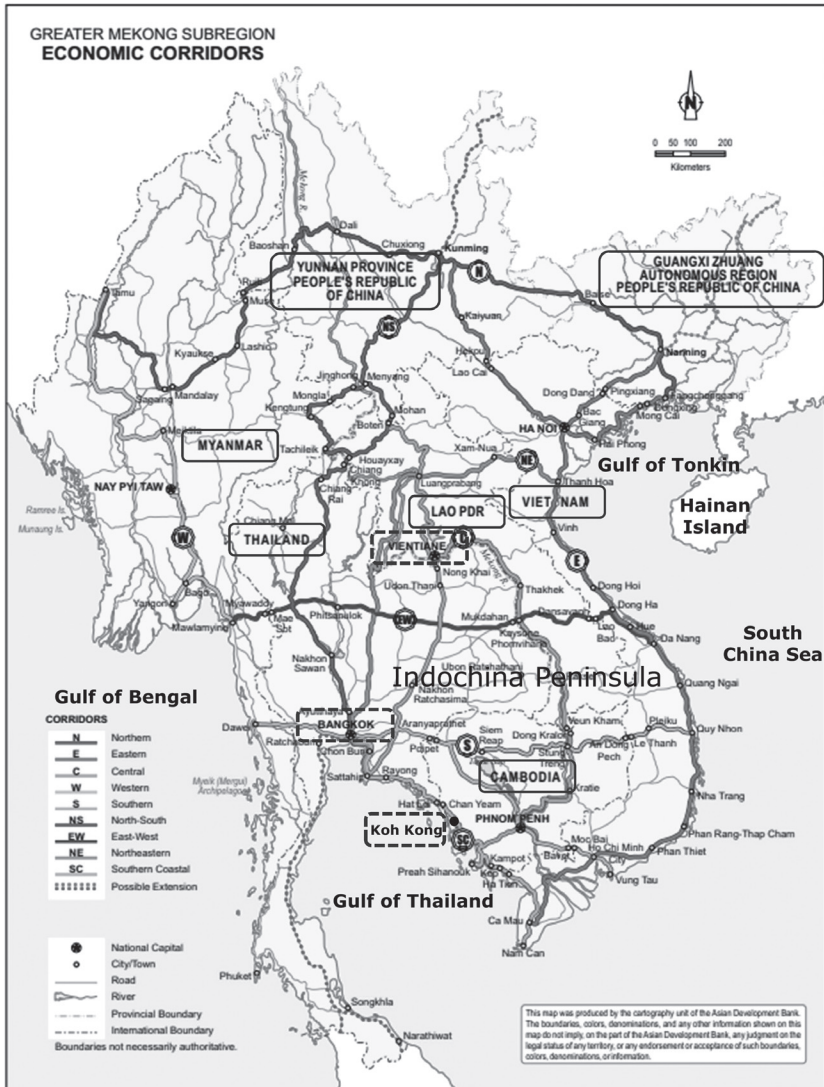


Figure 2: Major Economic Corridors in Mainland ASEAN and Overseas Companies from Thailand

Source: Compiled from ADB: Greater Mekong Subregion, Economic Cooperation Program.

Table 1 Comparison of Minimum Wages ASEAN (2022-2023)

	Thailand	Cambodia	Laos	Vietnam	Malaysia	Myanmar
Daily Wage	about JPY 1,279 ~ about 1,381 JPY	about JPY 793 ~ about JPY 1,142	about JPY 390 ~ about JPY 480	about JPY 754 ~ about JPY1,086	about JPY 1,758	about JPY 320
Monthly Wage	about JPY 31,975 ~ about JPY 34,525	about JPY 19,825 ~ about JPY 28,548	about JPY 9,750 ~ about JPY 12,000	about JPY 18,850 ~ about JPY 27,144	about JPY 43,950	about JPY 8,000

Note: Shaded figures are calculated based on a 25-day month.

Source: Ago, I, and Esther, T (2022), Ebado, J (2023), Sho, H (2022), Naornrod, J, and Fujita, Y (2022), Yamaguchi, N (2022), Yamada, K (2023) created from.

easily accessible and there are production sites in the respective regions. The next advantages are labour costs (cost reduction) and cultural aspects (communication).

As shown by the minimum wages in mainland ASEAN in Table 1, wages have increased in Thailand⁽⁶⁾ and Malaysia, the top middle-income countries, based on gross national income (GNI)⁽⁷⁾ per capita over the previous year. Companies will be placed at a disadvantage if they must pay labour costs in these middle-income countries (Ago et al., 2022; Ebado et al., 2023; Yaginuma, 2023).

In addition, Thailand and its neighbours Cambodia, Laos and Myanmar are similar in terms of economic status and culture, being the same Least Developed Countries (LDCs)⁽⁸⁾ with Buddhism as their main religion. Thus, if Company A builds a factory in the neighbouring countries, it will be easy to send employees (both managers and skilled workers) from the Thai factory to provide guidance on the launch and operation of the new site.

Furthermore, as Thailand and Laos have very similar languages with each being positioned as a dialect of the other country, employees from both countries can communicate smoothly with each other. Therefore, executives, managers, and workers of the Laos factory can receive training

at the Thailand parent factory.

Finally, as these countries share a border with Thailand, the environment will be similar, making it easier to transfer Thailand employees to offer operational guidance. Because guidance can be provided by Thailand nationals rather than Japanese with high labour costs, the company can significantly reduce expenses for initiating production and monitoring operations.

3.2 Overseas Expansion Strategies of Japanese Automobile Companies

In general, there are three patterns of overseas expansion to neighbouring and other foreign countries by companies established in Thailand. The type of overseas expansion is selected according to the various risks inherent in the destination country, the trends in employment conditions, the state of infrastructure such as port facilities and highways, and the future economic and political outlook.

(1) The first overseas expansion pattern is that of a 100% foreign-invested enterprise. This form can be classified into two: 1) 100% direct investment by a single foreign company (Japanese company operating in Thailand) to carry out business activities outside Thailand and 2) 100% direct investment by a number of foreign companies (Japanese company operating in Thailand plus Thai companies).

(2) The second pattern of expansion is through a joint venture with a local company in the destination country. This form of expansion can also be classified into two: 1) a joint venture investment with a company in the destination country, where the foreign company has majority control over corporate management (holds the majority of voting rights) and 2) a joint

venture investment with a foreign company, where the company in the destination country has majority control over corporate management.

(3) The third pattern of expansion is through a business tie-up with a local company in the destination country. In this type of expansion, the foreign company outsources manufacturing to the contractor (local contracting company) while providing the necessary technologies, equipment, and raw materials under the condition that there is no capital tie-up. All products processed and manufactured by the contractor are then exported to the foreign outsourcer. In this case, a processing deal contract is concluded between the outsourcer (foreign company) and the local contractor.

A major objective of Company A for establishing manufacturing subsidiaries in Thailand's neighbouring countries of Cambodia and Laos is to take advantage of the low wages to significantly reduce costs.

Table 1 shows that Thailand and Malaysia have by far the highest minimum wages in mainland ASEAN. Japanese companies operating in Thailand will find that the labour-intensive assembly and production they have been using to date will push down the price competitiveness of their finished products. Therefore, it will be difficult for them to gain a competitive advantage with the rise in labour costs in Thailand going forward, as they will not be able to survive as a company.

Meanwhile, based on the ASEAN Trade in Goods Agreement (ATIGA)⁽⁹⁾, all tariffs were eliminated for the five developed ASEAN countries in 2010 and for the five least developed ASEAN countries in principle in 2018 (Urata, 2018). In addition, among the preferential beneficiary countries, Cambodia and Laos, whose economic development is particularly slow, have been designated as special preferential beneficiary countries.

Therefore, a major objective of Company A's global supply chain is to

benefit from the cost-saving effects deriving from elimination of tariffs and preferential tariffs in ASEAN.

3.3 Global Supply Chain Strategies of Vietnamese Companies

In the past, Vietnam had secured a highly competitive advantage over other countries by providing cheap domestic labour. In recent years, however, Vietnam's high labour costs and dependence on imports of materials and components have become more pronounced.

This has made it increasingly difficult to maintain a competitive advantage amid fluctuating exchange rates. Therefore, some local companies are reviewing their global supply chains in order to maintain their competitiveness.

For example, as shown in Figure 3, companies in Vietnam have established manufacturing bases in the Special Economic Zone (including Manhattan SEZ, Taisen SEZ, Dragon King SEZ, and Chandon SEZ) along the border of Babette, Svay Rieng Province, Cambodia, where wages are lower, while keeping the mother factory in Ho Chi Minh City. This business model aims to reduce costs by moving some of the labour-intensive production from the traditional concentrated production in Vietnam to Cambodia and then importing the products back to Vietnam.

3.4 Global Supply Chain Strategy of Japanese Auto Parts Company A

Japanese auto parts Company A has established a mother plant in Thailand and manufacturing bases in neighbouring countries through its subsidiaries and affiliates based on the overseas expansion strategy described in the previous section. The global supply chain is being developed based on a business model of pursuing large cost reductions by building a logistics network among the manufacturing bases.

Company A's global supply chain, with Thailand as the regional



Figure 3: Land ASEAN Global Supply Chain

Source: Compiled from Ministry of Foreign Affairs (MFA) : Kingdom of Thailand.

headquarters, uses land routes such as the East-West, North-South, and Southern economic corridors between ASEAN countries.

Currently, Company A has manufacturing bases in Cambodia, Laos and Myanmar, which are neighbouring countries of Thailand, and is building a global supply chain linking these countries. Company A established a manufacturing company in Thailand as its subsidiary in the early 1960s.

Since then, the Thai subsidiary has set up manufacturing plants in neighbouring countries with the Thailand site functioning as the mother factory in ASEAN and has established a global supply chain for importing and exporting components and products. The following section examines Company A's global supply chain in Cambodia and Laos. Myanmar, which is under military rule, is excluded from this study.

(1) In Cambodia, a manufacturing plant for wire harnesses has been established in the Koh Kong SEZ, located in the Cambodian side of the border along the East-West Economic Corridor, as shown in Figure 4,

This Cambodian plant fully leverages the country's advantage in term of low wages and location and serves as a wire harness production base that complements the plant in Thailand, where labour costs are rising rapidly.

In particular, as Koh Kong SEZ is located along the Cambodia-Thailand border, it has high connectivity with Thailand's Eastern Seaboard Industrial Zone, located in the southeast of the capital Bangkok, forming a global supply chain that efficiently connects the Thailand and Cambodian bases (e.g., procurement of parts, materials and raw materials, cost reduction, shorter lead times).

The establishment of the Cambodian plant also aims to contribute to the development of the country's economy by increasing local employment and exports and diversifying export destinations and export items.

(2) The Laos case is shown in Figure 4, where a manufacturing plant for wire harnesses has been established in the capital Vientiane. The Laos factory was set up under the third business expansion type of tie-ups mentioned in the previous section, and is a contract processing model with no capital tie-up.

The Laos plant is provided with equipment, materials and technical support free of charge, including payments for purchases of completed wire harnesses and employee training.

While the distance by land between Bangkok in Thailand and Vientiane in Laos would be 636 km, the completion of the Thai-Laos Friendship Bridge⁽¹⁰⁾ over the Mekong River has enabled companies to build an efficient global supply chain.

Goods can now be distributed between Thailand and Laos with the same

lead time as that of a domestic supply chain in Thailand. The completion of the Thai-Laos Friendship Bridge has also helped Laos establish the same logistics conditions as those of Thailand.

Basically, components and raw materials are exported from Thailand to the manufacturing sites (including subsidiaries and group companies) in neighbouring countries, and the completed parts are then imported back to the mother factory in Thailand.

By transporting components and products to and then from manufacturing companies, the issue of trade imbalance⁽¹¹⁾, which is the biggest challenge in transport with developing countries can be solved. In recent years, cross-border payments have also become available to facilitate the transport of goods, making it necessary to link financial data as well.

4. Conclusion

In recent years, advances in IT have made it possible for various organisations in a global supply chain to share information among each other. Traditionally, digitalisation of trade operations was thought to be impossible due to the numerous parties involved and the complexity of processes. However, digitalisation has led to the establishment of trade data platforms in various countries, which are being linked to each other to create an efficient global supply chain.

Several trade data platforms have been built in Japan as well, and there are finally moves to link and connect those platforms, leading to better convenience. By utilising IT, companies are shifting from the “follow-the-rest” model to unique and more strategic models for building their global supply chain.

Many Japanese companies operating in Thailand have also established manufacturing companies in neighbouring countries mainly to reduce costs

and have built their own global supply chain by linking these sites. In the future, digitalisation is expected to progress further, extending to cross-border payments between countries involved in trade operations.

Acknowledgements

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Note

- (1) ASEAN (Association of South - East Asian Nations) was established by the Bangkok Declaration of 1967. The original members of ASEAN were Thailand, Indonesia, Singapore, the Philippines and Malaysia. Subsequently, Brunei joined in 1984, Vietnam in 1995, Laos and Myanmar in 1997, and Cambodia in 1999, with the group now comprising 10 countries. ASEAN launched the Community at the end of 2015 with the aim of building cooperation on the political, security, economic, social and cultural pillars. ASEAN has shown high economic growth over the past decade and its potential to become an 'open growth centre' for the world is attracting attention from around the world. ASEAN celebrated its 50th anniversary in 2017. The six major ASEAN countries all saw a high growth rate in 2022—Indonesia (+5.3%), Thailand (+2.6%), Malaysia (+8.7%), Singapore (+3.6%), the Philippines (+7.6%), and Vietnam (+8.0%) (Hosokawa, 2023).
- (2) This paper is based on Tetsuro Saisho (2023a), "A Study on the Actual Situation and Challenges of Global Supply Chains in Thailand," Tetsuro Saisho (2023b), "A Study on the Actual Situation of Global Supply Chains in ASEAN," and "Japan-ASEAN Friendship and Cooperation. 50th Anniversary Collected Papers: On the 50th Anniversary of Japan-ASEAN Friendship and Cooperation," with significant additions and revisions.
- (3) The Trade Consortium promotes the introduction of IT in trade operations and brings together various domestic and international organisations: 100 organisations in February 2022, 180 organisations in February 2023, and 205 organisations in June 2023. The Trade Consortium provides information on the trade data platform *TradeWaltz* to member organisations and conducts various studies (TradeWaltz M&S, 2023).
- (4) The information society is a society in which large amounts of information are produced, stored, and disseminated constantly through rapid information processing by computers and the transmission of information via the internet. In an information

society, anyone can access the information they need via the internet, anytime, anywhere, and as many times as they wish.

- (5) For the land-based economic corridors in ASEAN, land routes such as roads and viaducts have been developed with assistance from countries around the world.
- (6) In Thailand, a uniform national minimum wage of 300 baht per day was introduced in all regions of the country in January 2013, but since January 2017, the minimum wage has been region-specific, ranging from 300-310 baht depending on the region (Ministry of Health, Labour and Welfare, 2017).
- (7) Gross National Income (GNI) is the sum of income received by each economic entity in the country, including income from abroad (= “received from abroad” – “paid abroad”). GDP is “the value added of goods and services produced in the country during the year,” whereas, GNI represents “the total income received by residents from domestic and foreign sources during the year.” In the past, GNI was referred to as “Gross National Product” (GNP), but this has been changed to GNI in recent years.
- (8) Least Developed Countries (LDCs) are countries that are particularly underdeveloped and have been authorised by the (UN) Economic and Social Council based on three criteria for authorisation by the UN Committee for Development Planning (CDP), and by a resolution of the UN General Assembly. The three criteria are: (i) Gross National Income (GNI) per capita, averaged over three years at USD 1,018 or less. (ii) HAI (Human Assets Index), an indicator set by the CDP that expresses the proportion of the population undernourished, the under-five mortality rate, the maternal mortality rate, the secondary school enrolment rate and the adult literacy rate. (iii) Economic Vulnerability Index (EVI), set by CDP, is an indicator of economic vulnerability from population size, geographical factors, economic structure, environment, trade shocks and natural disaster shocks.
- (9) The ASEAN Trade In Goods Agreement (ATIGA) discusses and negotiates the legal and institutional arrangements for the free movement of goods in order to realise the ASEAN Free Trade Area (AFTA).
- (10) The Thai-Laos Friendship Bridge is a 1,174 m long border bridge over the Mekong River, completed in 1994 with assistance from the Australian Government. The bridge links Nong Khai (Thailand) and Vientiane (Laos).
- (11) The trade imbalance is that the volume of cargo from neighbouring LDCs to Bangkok is very low compared to the volume of cargo from Bangkok to neighbouring LDCs. The reason for this problem is that Thailand is the second largest industrial cluster in Asia after South China, while LDCs are still developing their supporting industries and have few exports.

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