

Situation Analysis Report

Enhancing Competitiveness of ASEAN
SMEs through Cluster Development
and International Quality Standard
Adherence Project



one vision
one identity
one community

Authors

The Situation Analysis Report was directed by Sarit Sanguanwongse and advised by Dr. Piyachat Pradubraj and Dr. Wichai Limpitikranon. A team of researchers who contributed substantively include: Peeranun Panyavaranant, Sompeeti Wallibhodome, Jidapa Meepien, Jinjuta Pattaranukul, Alex Coclanis and Natchapol Praditpetchara.



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EXECUTIVE SUMMARY

The Association of Southeast Asian Nations (ASEAN) region has exhibited strong economic growth, with 3.2 percent average growth per annum between 2012 and 2017 and a 2017 growth rate higher than the world growth rate (5.2 percent compared to the world's 3.1 percent) (IMF, 2017). This solid economic growth is supported by the region's steady supply of increasingly educated workers, increasing capital accumulation from a high domestic savings rates, healthy FDI and foreign capital inflows, the absorption and diffusion of new technologies, and vast natural resource endowments (OECD, 2016).

Small and medium-sized enterprises (SMEs) have been the backbone of the ASEAN economy, accounting for 88.8-99.9 percent of total regional establishments, providing 51.7-97.2 percent of total employment, contributing to 30–53 percent of each ASEAN country's GDP, and contributing to 10-29.9 percent of exports (ACCMSME, 2018). Nevertheless, ASEAN SMEs' ability to reach global markets has been curtailed by their limited capacity and knowledge about export market access. A strong positive link has been established between SME competitiveness and clustering. The ASEAN Strategic Action Plan for SME Development 2016-2025 emphasizes cluster enhancement as critical to regional value chain integration while a European Union study from 2014 pointed out that quality standards support SME competitiveness.

This situation analysis report aims to investigate the current situation, trends, capabilities, and competitiveness of SMEs in ASEAN in five high-potential industries: automotive, food and agriculture, medical device, textile and apparel, and tourism. The report evaluates each industry in terms of market size and growth potential, proportion of SMEs, institutional bodies (laws, regulations, and current standards), potential for mobilizing cluster development, and government policies. The findings from this report will be used by a committee of SME experts to recommend one industry for further in-depth analysis with a focus on business cluster development and international quality standard adherence.

The study employs both quantitative and qualitative research methods, focusing primarily on secondary data sources, and performs cluster analysis using Michael E. Porter's diamond model to examine the potential for mobilizing cluster development and the competitiveness of ASEAN countries in the global market in each industry.

The results of the study can be summarized as follows:

Automotive Industry

ASEAN has long been acknowledged as a major production base for the automotive industry, especially in Thailand, Indonesia, and Malaysia. In 2014, the region was ranked as the sixth largest vehicle production base (EU-ASEAN Business Council, 2015). Based on Michael E. Porter's Diamond Model analysis, the study found that the ASEAN governments have worked together through the structure of the ASEAN Economic Community and intra-regional free trade arrangements to reduce trade barriers between ASEAN countries. The sector is linked by many related and supporting industries in the region—rubber, electronics, and petrochemicals, amongst others—these industries enhance the cost competitiveness of the ASEAN automotive industry. In terms of demand conditions, the study highlights an increase in demand from both domestic and international markets. The ASEAN governments also actively support the industry by prioritizing policies that help attract foreign direct investment and support local enterprises.

On developing and enhancing industry competitiveness within AMSs, the study points out the necessity for ASEAN member states to focus on (1) developing technologies through research and

development, (2) enhancing labor skills, (3) further reducing trade barriers (taxes and tariffs as well as non-tariff barriers), and (4) enhancing industry standards and compliance.

Food and Agriculture Industry

ASEAN plays a vital role in the food and agriculture industry. This study shows that the region is highly competitive in global agricultural value chains, especially Thailand, Indonesia, and Malaysia. Despite being leading producers of food and agriculture products, however, most ASEAN countries are yet to reach their production potential. The study shows that, with the exception of Singapore, AMSs face low productivity in their agricultural production. The study finds that there are high demands for food and agricultural products both in international markets and domestic markets. The growth of the middle class is a key factor that contributes to the increase in buying capacity and changing consumer preferences. In order to ensure long-term food security, AMSs have implemented the ASEAN Integrated Food Security (AIFS) framework and the Strategic Plan of Action on Food Security 2015-2020. The ASEAN governments are also actively improving the livelihoods of farmers and creating an ecosystem where AMSs can integrate, cooperate, and operate in various aspects related to food production, food processing, and trade.

In terms of development and enhancing industry competitiveness within AMSs, the study points out the necessity for ASEAN countries to focus on (1) adapting products to match the changing lifestyles of ASEAN citizens and global consumers, (2) emphasizing niche markets, (3) complying with international standards, and (4) enhancing infrastructure and facilities to support the industry.

Medical Device Industry

The ASEAN medical device industry is projected to grow at an annual rate of around 9.7-11.2 percent. AMSs are currently in the process of strengthening and standardizing their medical device registration and regulation schemes to facilitate the growth of the industry. In 2015, all 10 AMSs signed the ASEAN Medical Device Directive (AMDD), which is meant to harmonize regulations and the registration processes for medical devices across the region. The directive is extensive and covers a wide variety of issues, such as medical device definitions and classification systems, documents required for registration, and post-registration regulations.

In terms of development and enhancing industry competitiveness within AMSs, the study points out that ASEAN countries need to focus on (1) requiring local content and technology transfer from FDI, (2) calling for local skill-building investment, (3) making joint venture investments compulsory, (4) supporting local investments in medium to high-end products, (5) enforcing regional standards and regulations, and (6) utilizing clustering to build industry competitiveness.

Textiles and Apparel Industry

Textiles and garments are one of the largest export products from ASEAN, especially from Vietnam, Indonesia, Cambodia, Malaysia, and Thailand. In the global value chains, ASEAN had a share of 19.7 percent of the U.S.'s apparel and garment imports. Further, it provides opportunities for more than nine million workers, of which the majority are women.

In terms of development and enhancing industry competitiveness within AMSs, the study points out the needs for ASEAN countries to focus on (1) promoting sustainable development, (2) enhancing productivity through innovation and technology, (3) improving workers' working conditions, and (4) building competitiveness through regional collaboration on industry standards and regulations.

Tourism Industry

The tourism industry has played a significant role in ASEAN economies. Some key success factors in the industry include cultural diversity and a rich endowment of natural resources. However, the study finds that many AMSs need to further develop infrastructure, business environments, regulatory frameworks, and human resources in order to compete in the highly competitive global tourism market.

A key challenge, therefore, is to raise the competitiveness of the tourism sector in certain AMSs as well as enforce relevant rules and regulations to ensure the environment is safe and the local communities also benefit from tourism activities in order to promote a more inclusive distribution of tourism benefits relative to factors such as local population and natural resources. The focus areas to address in order to raise industry competitiveness include marketing, product development, access to investment capital, service quality, human resources, connectivity and infrastructure, and travel facilitation.

Overall, the findings demonstrate that ASEAN SMEs have strong growth potential in the development of transformational enterprises where innovation and technological changes have become key drivers to improve overall industry performance.

Based on the findings, the following key recommendations are proposed for further investigation:

- 1) The future of the five industries in ASEAN depends heavily upon their ability to meet the changing needs and lifestyles of consumers and to take into account rapid urbanization, factors which are creating far-reaching consequences in the regional and global markets.
- 2) Government involvement in ASEAN regional economic integration is vital to addressing the key challenges ASEAN is facing in driving overall economic growth and developing high potential industries within the region.
- 3) Collaborative efforts and intra-regional cooperation are required to meet the global sustainable development goals.
- 4) Results from this situation analysis reveal that it is essential to develop regional ASEAN and country-specific strategies to address the human resources needs and the changing market requirements of industries within the region, particularly through education, training, and skills development.
- 5) There is strong potential for developing a single, integrated regional market and production base in target industries capable of managing transformative development changes in order to improve regional competitiveness for future growth.

INTRODUCTION

The Association of Southeast Asian Nations (ASEAN) is comprised of 10 member states: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. The ASEAN countries have a total population of approximately 640 million (CFR, 2018). The ASEAN region has exhibited strong economic growth over the past four decades. According to the International Monetary Fund's (IMF) World Economic Outlook Database April 2017, the economic growth of ASEAN is faster than the world's growth—ASEAN has a 4.6 percent growth rate compare to a 3.1 percent global rate. In addition, the regional growth rate for the year 2018 is projected to 5.1 percent compared to 3.9 percent of the world (IMF, 2018). With a 3.2 percent average annual growth between 2012 and 2017, ASEAN's share in the world economy has been continuously increasing. If this level of growth is sustained by rising productivity, ASEAN's economic size could double by 2040. The solid growth of the ASEAN economy has been supported by a steady supply of increasingly educated workers, increasing capital accumulation facilitated by high domestic savings rates, healthy FDI and foreign capital inflows, the absorption and diffusion of new technologies, and by the utilization of the region's vast natural resource endowments (OECD, 2016).

Located in an open, integrated regional economy with cross-border linkages, free trade arrangements, and active promotional policies by governments, ASEAN SMEs have strong potential to contribute to greater economic development both regionally and globally, particularly through the ASEAN Plus Free Trade Areas and linkages to regional and global supply chains.¹ Today, the 10 ASEAN member states are considered a global economic powerhouse that can attract investments from various developed nations, particularly the U.S. and the EU, as well as conduct intra-regional trade within the region (ASEAN, 2017).

It is undeniable that small and medium-sized enterprises (SMEs) constitute the backbone of the ASEAN economy. The ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME) (2018) indicates that SMEs account for between 88.8-99.9 percent total establishments in ASEAN Member States (AMSs). The sector absorbs between 51.7-97.2 percent of total employment. The contribution by these enterprises to each AMS' GDP is between 30–53 percent and the contribution of SMEs to exports is between 10-29.9 percent.

Although SMEs have played a significant role in the regional economy, their ability to reach global markets is severely diminished due in large part to limited capacity and knowledge about accessing export markets. Despite trade liberalization in recent years before the ongoing trade war the U.S. is waging with China, SMEs' contribution to exports has not increased. Economists have established a strong positive link between SME competitiveness and clustering, yet cluster promotion remains weak, particularly in less affluent areas of ASEAN, according to the 2014 ASEAN SME Index. The ASEAN Strategic Action Plan for SME Development (SAPSMED) 2016-2025 emphasizes cluster enhancement as critical to the ASEAN Economic Community (AEC) and regional value chain integration (Strategic Goal A-2). However, cluster development is not only a facilitating factor for the sustainability of SME competitiveness, enterprises' ability to meet quality standards is also critical to the long-term prospects of SMEs. A European Union study from 2014 pointed out that quality standards support SME competitiveness by facilitating the codification and dissemination of new knowledge and innovations, helping to improve products and services, ensuring interoperability, and enabling trade.

¹ Including ASEAN-China Free Trade Area (ACFTA), ASEAN-Japan Comprehensive Economic Partnership (AJCEP), ASEAN-Korea Free Trade Area (AKFTA), ASEAN-Australia-New Zealand Free Trade Area (AANZFTA), and ASEAN-India Free Trade Area (AIFTA).

This study is part of an ASEAN project, funded by the government of Japan through the JAIF-Emergency Assistance Related to Financial Crises in the ASEAN Region (EEA) (part A), titled “Enhancing Competitiveness of ASEAN SMEs through Cluster Development and International Quality Standard Adherence.” The project aims to provide insight and guidelines to support the strengthening and enhancement of SME competitiveness through cluster development and raising awareness about international quality standards. The project expects that participating SMEs will increase their awareness of cluster competitiveness and international standard adherence and strengthen their capacity and know-how to connect with other businesses and integrate their operations and products into regional and global value chains. The project hopes to contribute to the achievement of strategic goals outlined in the ASEAN SAPSMED 2016-2025, particularly Specific Goal C, “Enhance Market Access and Internationalization,” and Goal A “Promote Productivity, Technology and Innovation.”

This situation analysis report aims to investigate the current situations, trends, capabilities, and competitiveness of SMEs in ASEAN in five high-potential industries: automotive, food and agriculture, medical device, textile and apparel, and tourism. The five industries are selected for analysis based on their high growth prospects, high proportions of SMEs, the potential for transnational value chain linkages and expansion, the overall effect on economic development within the ASEAN region, and the potential for mobilizing cluster development. The report evaluates each industry in terms of market size and growth potential, proportion of SMEs, institutional bodies (laws, regulations, and current standards), potential for mobilizing cluster development, potential in linking between developed and developing ASEAN member states, and government policies. Furthermore, the study also evaluates global and regional market size, growth potential, industry trends, SME capabilities, challenges in each sector, and the quality standards imposed by the industry and relevant government bodies. The findings from this report will be used by a committee of SME experts to recommend one industry for further in-depth analysis with a focus on business cluster development and international quality standard adherence in order to recommend policies aimed at enhancing the competitiveness of SMEs in the chosen industry to governments in the region.

The study employs a mixed method research methodology—the research team conducted both quantitative research and qualitative research focusing primarily on secondary data sources. In terms of cluster analysis, the study includes, but is not limited to, the application of Michael E. Porter’s diamond model in examining the potential for mobilizing cluster development and the competitiveness of AMSs in the global market in each industry. Although the study attempts to use a similar approach in all five industries for conformity, the distinctive nature and unique conditions in each industry warrant a tailored analysis corresponding to the particular characteristics of each industry.

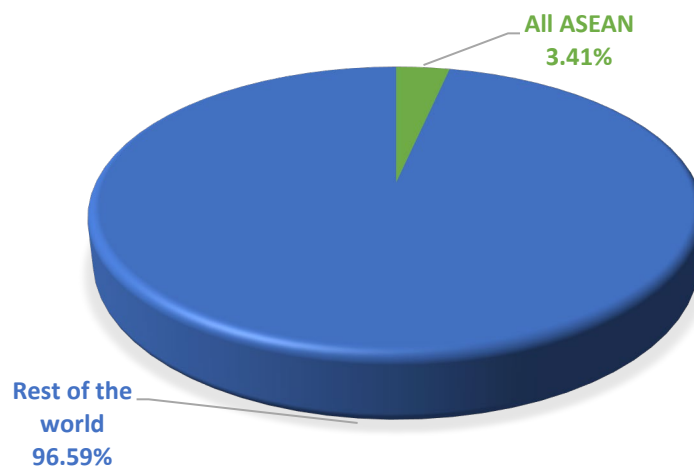
1. AUTOMOTIVE INDUSTRY

1.1 INDUSTRY OVERVIEW

With global car exports by country of US\$740.1 billion in 2017, cars represent the world's number one export product by value, surpassing crude petroleum revenues that were handicapped by lower oil prices.² The automotive industry is a key sector in every large economy (OICA, 2018). The industry includes two main subsectors, vehicle manufacturing and auto parts supplies, and involves a significantly diverse group of businesses ranging from car design to finance. The vehicle manufacturing outputs are not only limited to cars but also include specialized industrial vehicles and other capital equipment. The motor vehicle parts manufacturing industry, on the other hand, includes original equipment manufacturers (OEM) and replacement equipment manufacturers (REM). Key parts markets include heating, ventilation, air conditioning (HVAC), batteries, cockpit electronics, engine oil, gear oil, paint, plastic, sensors, airbags, lightweight automotive materials and coatings. Automotive products utilize a wide range of materials such as leather, composites, plastics, metals, and fabrics for applications such as dashboards, seats, belts, airbags and more. Oxford Economics estimates the total value of the automotive market at US\$62.5 billion in 2016 (PwC, 2018).

In 2017, the International Organization of Motor Vehicle Manufacturers (OICA) reported the total global unit sales/new vehicle registration for passenger cars and commercial vehicles with at least four wheels at 96.8 million units. The world's top markets include China, India, Germany, France, the U.S., Japan, the U.K. and Italy (Euler Hermes, 2018). The ASEAN region's share of the global unit sales is approximately 3.41 percent (see Figure 1). Indonesia is the largest market in the region with a 1.10 percent global market share (1,060,894 units), followed by Thailand at 0.90 percent (873,506 units), Malaysia at 0.61 percent (591,096 units), the Philippines at 0.37 percent (358,558 units), and Vietnam at 0.28 percent (269,570 units) (Figure 2). The other ASEAN Member States (AMSs) contribute much smaller sales. It should also be noted that among AMSs, Indonesia and Thailand together account for more than half of the region's sales (Indonesia 32.14 percent and Thailand 26.47 percent).

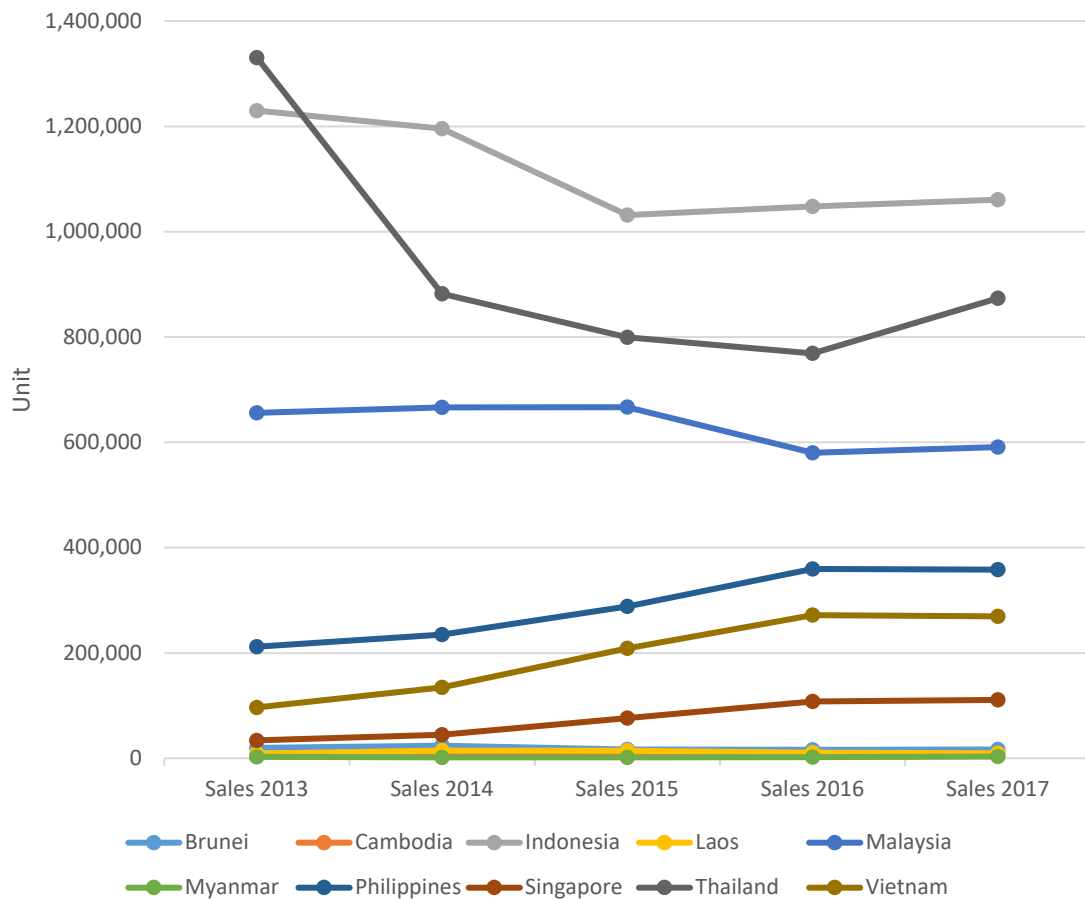
Figure 1: ASEAN's share of global motor vehicle sales (2017)



Source: International Organization of Motor Vehicle Manufacturers (OICA)

² <http://www.worldstopexports.com/car-exports-country/>

Figure 2: Number of new vehicle sales or registration in ASEAN (All Types)

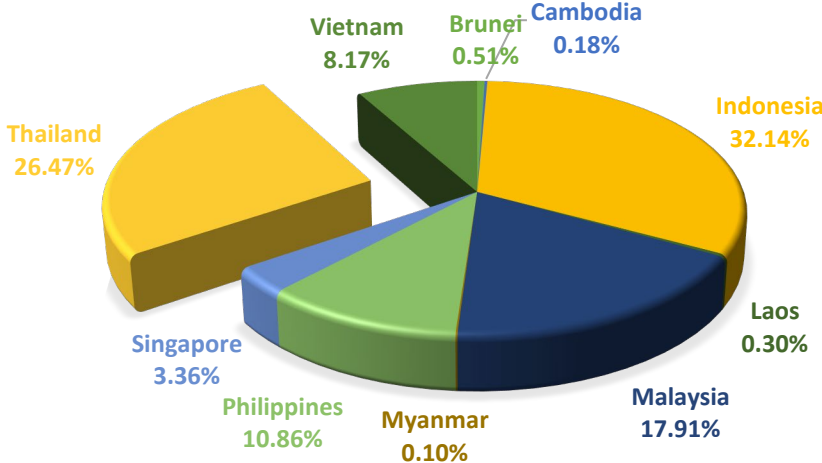


Source: OICA

In terms of production, the estimated number of vehicles produced globally in 2017 was 97.3 million units as reported by OICA (with missing numbers from some manufacturers; i.e., BMW, Mercedes, Audi and JLR). The only AMSs reporting vehicles production are Indonesia, Malaysia, the Philippines, Thailand and Vietnam. Among those countries, Thailand is the largest vehicle manufacturer, producing approximately 1,988,823 units in 2017 with Indonesia as the second largest at 1,216,615 units. Production in other countries is much smaller.

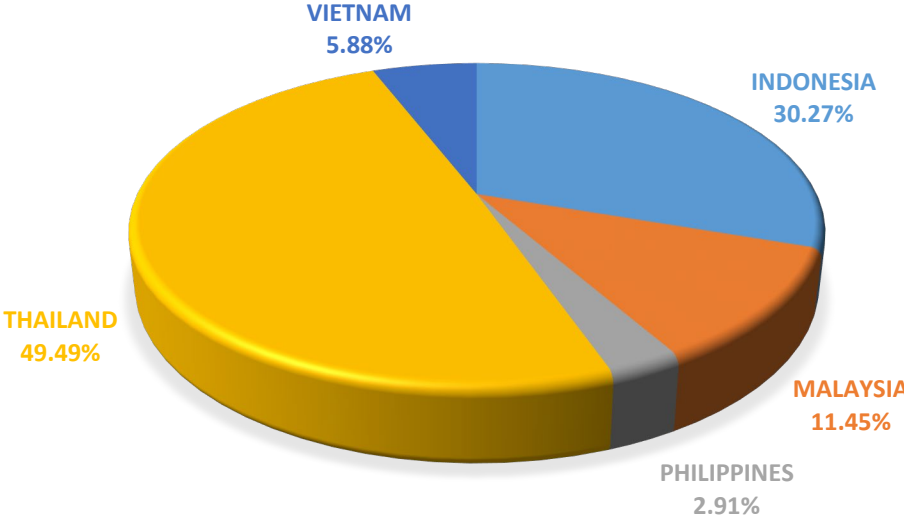
Overall, the performance of the ASEAN region as an automotive manufacturer is being led by Thailand, followed by Indonesia and Malaysia, in terms of automotive production volume and automotive components and parts sales.

Figure 3: Share of new motor vehicle registration in ASEAN (2017)



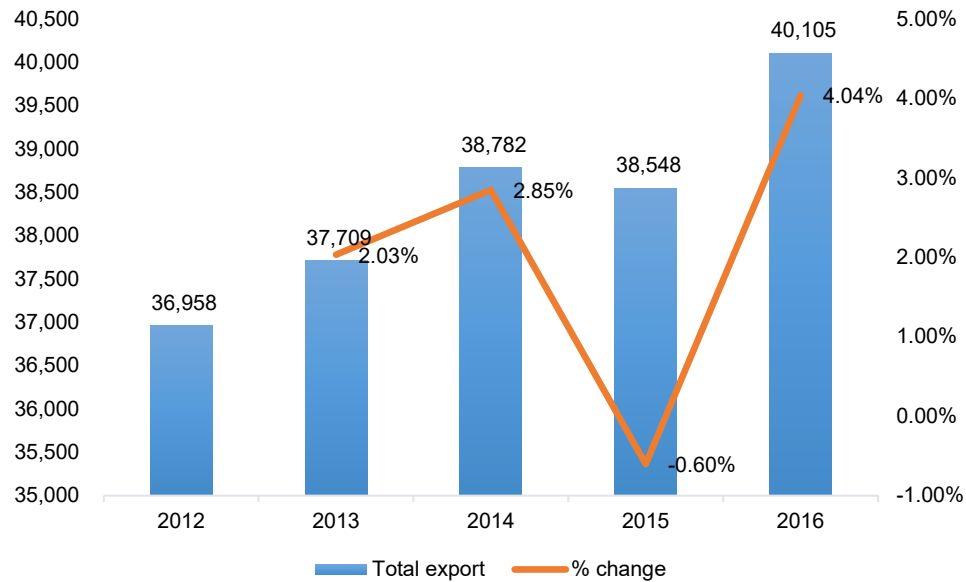
Source: OICA

Figure 4: Share of motor vehicle production in ASEAN (2017)



Source: OICA

Figure 5: Total ASEAN export of automotive products (US\$ Millions)



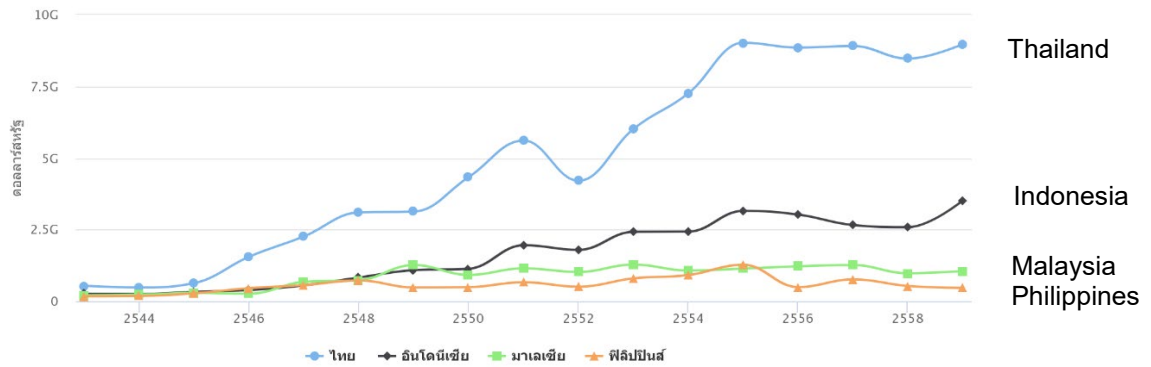
Source: WTO

1.2 INDUSTRY GROWTH

It is expected that by 2023, the global automotive market will have a total value of US\$45.76 billion, a 68.55 percent increase from US\$27.15 billion in 2016, as a result of increasing vehicle production in emerging markets, rising needs for electric vehicles (EV), and more demands for autonomous driving technology (Statistics MRC, October 2017). Euler Hermes Economic Research forecasts that the global automotive market will pass the threshold of 100 million units in 2019, a 2.5 percent increase from 98 million units in 2018. The continuous growth forecasted is due to private consumption, corporate investment, rising income, and low interest rates in most markets, with China and India as the biggest contributors to sales growth. The exceptions among the world's leading markets are the U.S. and U.K. markets where the research expects a 2 percent and 6 percent decrease, respectively, mainly because of the rise of used car sales in both markets. The growing demand in emerging markets will also contribute to mid-term sales. Despite a consensus by automotive industry executives on constant market growth, they still expressed concerns about some important industry changes, including the fear of the EU falling apart and the regional shift from the U.S. and Western Europe towards China. It is expected that China will account for 40 percent of global vehicle sales by 2030 (KPMG, 2017).

Following the establishment of the ASEAN Free Trade Agreement (AFTA) in 2015, the automotive industry has benefitted greatly from lower tariff rates. Car manufacturers and parts suppliers can trade across borders at lower costs and achieve better management of supply chains. The ASEAN automotive industry, especially the motor vehicles sector, expects future expansion within the region both in sales and production. The chart below illustrates the export of automotive products by key ASEAN exporters.

Figure 6: Export of automotive products (2001 – 2015)



Source: Department of International Trade Promotion, Thailand's Ministry of Commerce

In Thailand and Indonesia—the two largest ASEAN markets, which account for more than half of the region’s motor vehicle and motorcycle sales and production—there has been a slight decrease in some sectors. The ASEAN markets, however, demonstrate overall continuing growth trends.

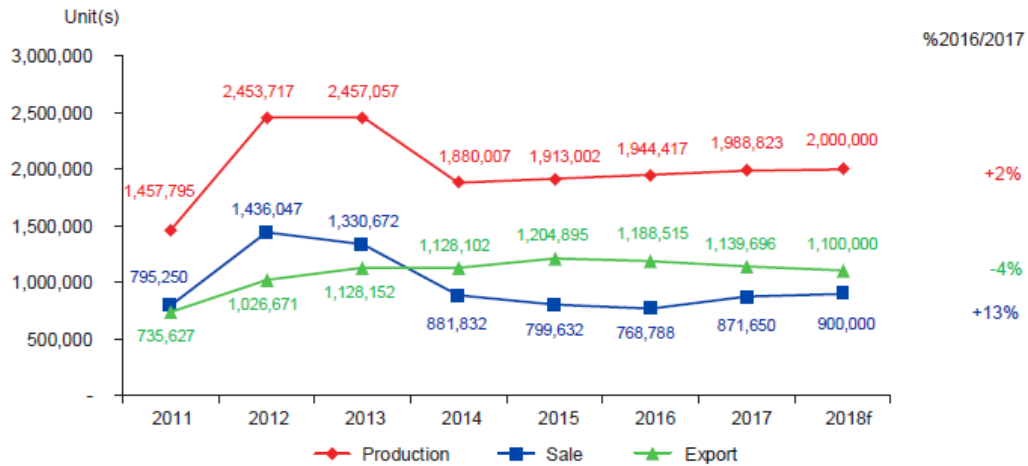
It is forecasted that the total motor vehicle sales through 2020 in Indonesia will continue to rise despite slightly slower growth in the commercial vehicle segment (1.9 percent growth in the bus segment and 3.5 percent in the truck segment). The passenger vehicle (PV) segment is expected to grow at 6.8 percent as a result of increasing demand from the growing population and cities. The strongest growth is in a PV sub-segment, the low-cost green car segment, at an 8.1 percent growth rate (Ipsos, 2016). This trend is fueled by government and private sector initiatives such as infrastructure development, support for SMEs, FTAs, ease of down payment requirement, and FDI growth. Nevertheless, despite its large market size, Indonesia’s manufacturing capacities are less competitive than Thailand’s, ASEAN’s second largest market, due to the country’s dependency on foreign direct investment (FDI) in the automotive sector (ASEAN Briefing, 2017). More foreign investment is expected in the automotive industry in the future as Indonesia offers a lower cost of operation than Thailand (Thailand Automotive Institute, 2012).

In Thailand, the most prominent automobile and auto parts manufacturer in the ASEAN region, Figure 7 shows that production numbers have constantly grown since 2014, though not at a high rate. The total number of motor vehicles produced in 2017 was 1,988,823, a two percent increase from the previous year. Domestic sales started to see growth from 2016 onwards. The increase in sales and production is the result of several factors: domestic market expansion, the recovery of the Thai economy and export markets, investment promotion policy, infrastructure investment, and the end of the “First car buyer scheme,” which will free car owners from debt and enable them to buy a new vehicle. In July 2018, the Automotive Industry Club of the Federation of Thai Industries (FTI) expressed their optimism for the whole industry, though with some concerns about a slowdown in sales in the domestic motorcycle market due to weaker purchasing power of the working class. They predicted a total sale of 960,000-980,000 vehicles in 2018, up from a previous forecast of 900,000 units, while the motorcycle market will not see much growth with a projected sale of 1.8 million units

It should be noted that new automobile technologies, especially electric vehicles (EV), still play a small part in the Thai market, although the technology was introduced in Thailand in approximately 2010 (KPMG, 2018). As of June 2017, the Land Transport Department reported only 84,236 registered hybrid electric vehicles (HEVs) and plug-in hybrid electric vehicles (PHEVs). Prompted by the government’s hybrid and EV promotion policies, some automakers, such as Toyota, have

launched new models equipped with new technologies. Approximately 2,000 HEV cars have been ordered (Thansettakij, 2018). These sub-sectors are expected to grow in line with increasing market demand.

Figure 7: Thailand's production, sale, and export of motor vehicles (2011 – 2017)



Source: Thailand Automotive Institute

The Department of Trade Negotiations, Ministry of Commerce reported the total export value for auto parts in 2017 at US\$19.845 billion, an increase of 16 percent from the previous year. Of this export value, 97 percent is from motor vehicle parts, and the rest is motorcycle parts. Thailand's auto parts export enjoys a strong growth in the following product categories: electric accumulators (29.66 percent), tires (22.29 percent), and engines (18.62 percent). The items with the highest export value are other parts and accessories for motorcycles, valued at US\$8.253 billion, representing an 11 percent growth. However, exports of safety glass and glass mirrors decreased by 7 percent to US\$154 million due to a slowdown in the Japanese and Malaysian markets.

1.3 ASEAN'S COMPETITIVENESS

Despite the establishment of the ASEAN Economic Community (AEC) in 2015—which resulted in a single market with a combined market of US\$2.6 trillion and a population of over 628 million (Statista, 2018), approximately 8.5 percent of the world population (Worldometers, 2018)—the entire ASEAN economy and its buying power remain weaker than many other economic regions around the world. While all AMSs are witnessing a growing middle class, a large number of the ASEAN population are low-income earners and demand cheaper vehicles. The demands also vary in different markets. For instance, the Indonesian market requires larger family cars in the multi-purpose vehicle (MPV) and sport utility vehicle (SUV) segments, as Indonesians live in extended families and many work on big plantations. On the contrary, the majority of Malaysian consumers earn more income and many work in cities. Thus, the sedan car segment is bigger in Malaysia (Thailand Automotive Institute, 2012). Nonetheless, driven by the rapid rise of the middle class, urbanization, infrastructure development, and the largest population in ASEAN (265 million people in 2018), Indonesia remains one of the most attractive markets for automotive investors.

In terms of manufacturing, only Thailand, Indonesia, Malaysia, the Philippines, and Vietnam currently have the ability to develop a favorable environment for large manufacturing bases. These countries are also the largest producers of automobiles in ASEAN (Table 1). On the other hand, Singapore plays a superior role in research and development, design, quality control, market forecast, market development, brand development, after-sales services, and financing. Other AMSs are the sources for raw materials for supporting industries such as tires, leather, plastics, and chemicals (Sadudee Vongkiattikachorn, 2015).

Table 1: Car Production in ASEAN

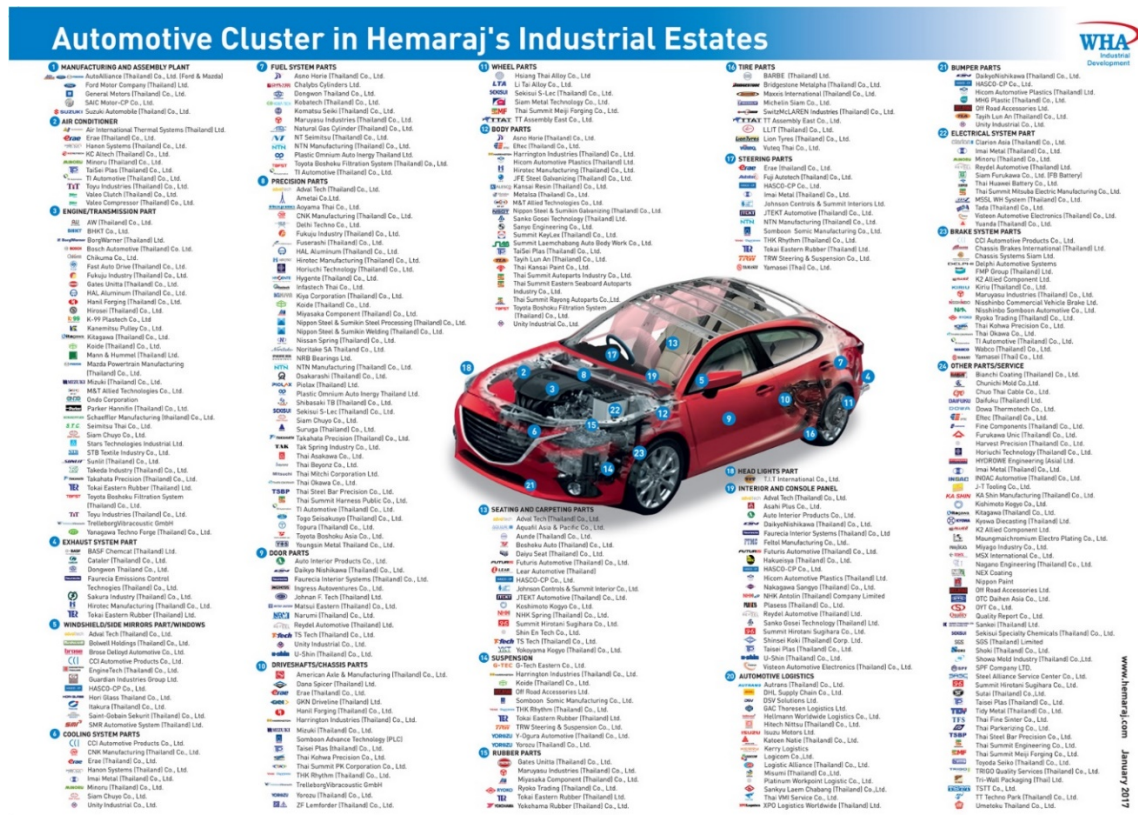
Country	2014	2015	2016	2017
Thailand	1,880,007	1,913,002	1,944,417	1,988,823
Indonesia	1,298,523	1,098,780	1,177,797	1,216,615
Malaysia	596,418	614,664	545,253	499,639
Philippines	88,845	98,768	116,868	141,252
Vietnam	121,084	171,753	236,161	195,197
ASEAN	3,984,877	3,896,967	4,020,496	4,041,526

Source: ASEAN Automotive Federation

Among all AMSs, Thailand is the leader in motor vehicle production and automotive parts manufacturing. The country's automotive sector has developed into the biggest automotive hub in Southeast Asia and one of the largest in the world, ranking as the world's 13th largest automotive manufacturer in 2016 (ASEAN Briefing, 2017). According to a report by OICA, in 2017 Thailand ranked as the fifth largest light commercial vehicles (LCV) producer in the world, notably the largest production base of the 1-ton pick-up truck segment, and the 18th largest for passenger vehicle (PV) production. The country is the base for 18 auto assemblers with a total production of 1.94 million units with a target to reach 3.5 million units by 2020.

Thailand is the home to production hubs, R&D hubs, and regional head offices of several key players in the automotive industry, including Toyota, Honda, Nissan, Isuzu, Mitsubishi and BMW (Thailand Board of Investment, 2017). The country has been dubbed the "Detroit of Asia" for several years. Its strategic location and supporting infrastructure includes international airports, seaports, rails, and comprehensive road networks, which also ease connection and trade both within ASEAN and throughout Asia. Auto assemblers and auto parts manufacturers are located close together in the same areas around Bangkok and the vicinity and in the eastern provinces. Hemaraj Land and Development's industrial estates in eastern provinces serve as a base for Thailand's automotive cluster. The country's attractive foreign investment policies, competitive, skillful labor supply, and reasonable costs of doing business constantly entice FDI into its automotive industry.

Figure 8: Automotive cluster in Hemaraj's industrial estates



Source: www.hemaraj.com

Indonesia is the second largest manufacturer in ASEAN, with a complete supply chain in MPV and SUV manufacturing in line with the domestic market demand. Nonetheless, the country is far behind Thailand in several aspects. It is heavily dependent on FDI from Japan in setting up automotive manufacturing facilities. The sedan car segment is not well developed, a missed export opportunity, as 80 percent of the world's market is in sedan cars. The auto part industries also need development to support automotive manufacturing. The country's archipelagic geography creates a barrier to establishing comprehensive production bases and for transportation.

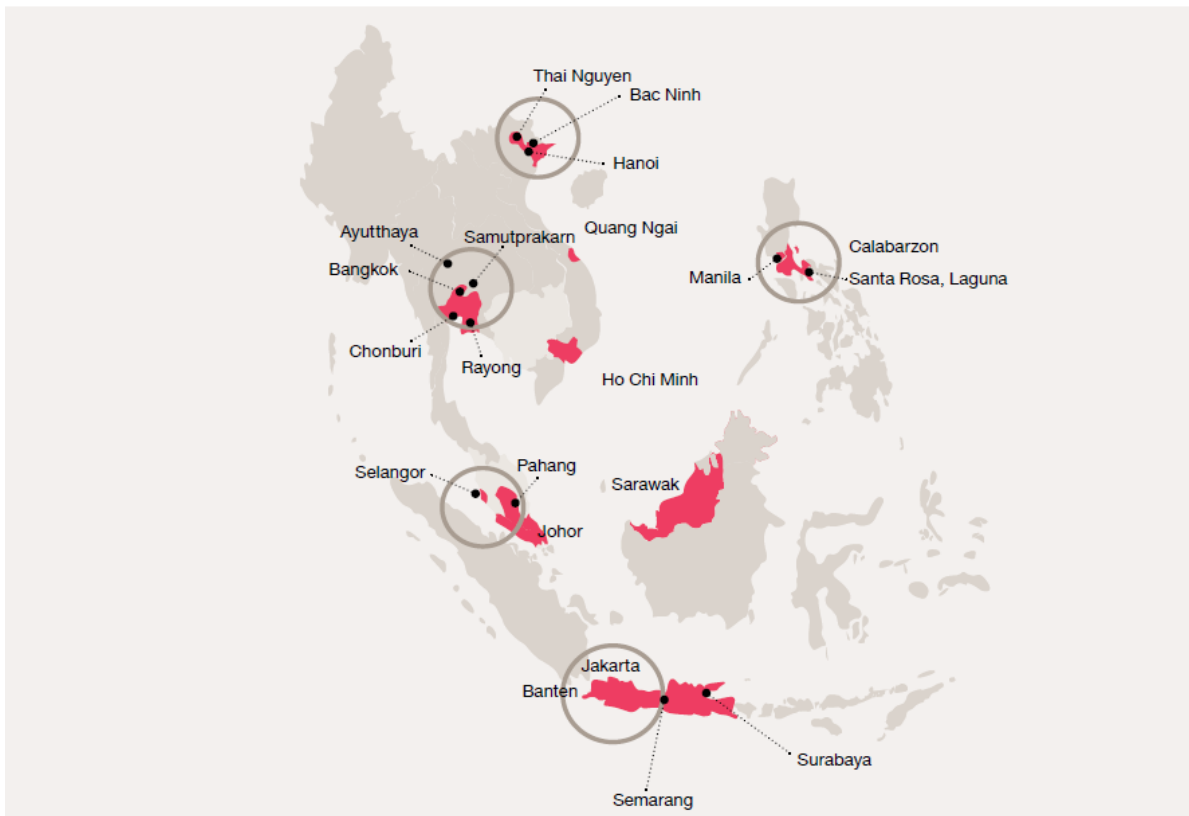
Currently, the automotive industry is located primarily in West Java, near Jakarta, in response to market demand and better infrastructure. This area is dubbed the "Detroit of Indonesia." The Indonesian government plans to make Indonesia a global motor vehicle production base and overtake Thailand as the automotive manufacturing hub of ASEAN, as well as to build completely built units (CBU) with all locally made parts. The government also aims to export more cars by taking advantage of the AEC's free trade and reduced tariff arrangements. Nonetheless, Indonesia's automotive industry standard for CO2 emissions is still at EURO2 level while other countries have already reached EURO5. Furthermore, the safety standards and technology in the industry are still at a relatively low level (Indonesia Investments, 2018).

The automotive industry in Malaysia, the third largest in ASEAN, has taken a different path in developing their industry. The Malaysian automotive industry has aimed to serve the domestic market since the 1980s by building the nation's automobile, "Proton," followed by "Perodua" in 1994. Malaysia aims to be a car producer with strong supporting industries, such as electronics,

rubber, and petrochemicals, rather than building up a large manufacturing environment where small and medium enterprises can benefit from participating in global value chains, as in Thailand's case (Law of ASEAN, 2016). The country openly adopts rules and regulations as well as non-tariff measures to protect local investors and the national automotive industry. The domestic PV market, however, is reaching maturity with a slower growth rate.

Other AMSs that have competitive production facilities are relatively small compared to Thailand and Indonesia. Although consumers in the Philippines have had increasing purchasing power, the automotive industry in the country is only at the beginning stage of development. Similar to Indonesia, its archipelagic geography creates a barrier in developing the industry. Vietnam, on the other hand, offers more opportunities due to its ongoing development of supporting infrastructure, including industrial zones with investment privileges to attract investors, knowledgeable laborers at relatively low wages, and supporting industries such as rubber and steel. There is some current and planned future FDI in Vietnam's automotive industry from large auto makers such as Mitsubishi Motors, General Motors, and Ford, which will expand the country's capacity. The Vietnamese government has a strategy to develop its automotive industry by developing an automotive cluster (Thailand Automotive Institute, 2010).

Figure 9: Key automotive industrial zones in Southeast Asia

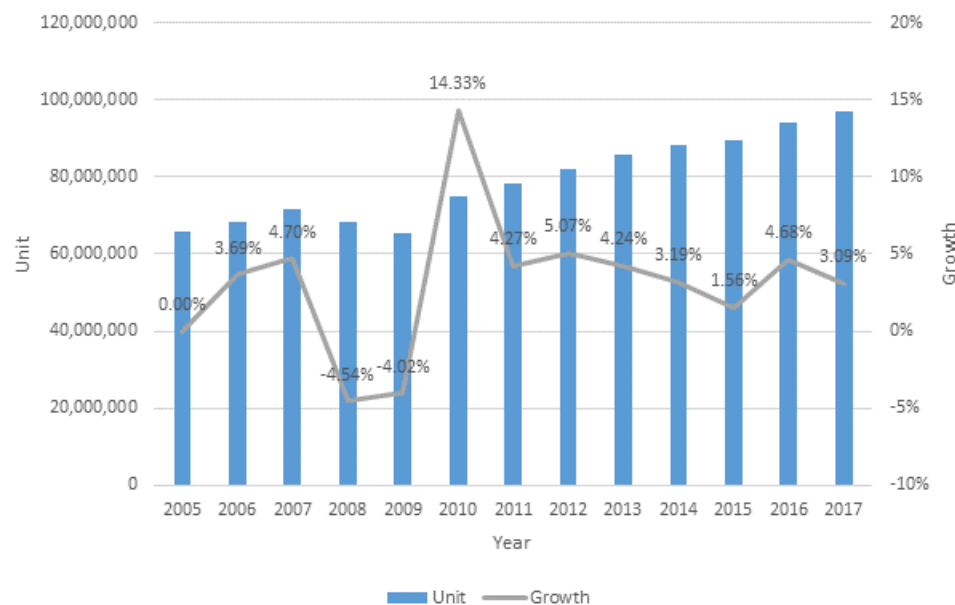


Source: PwC, November 2015

1.4 EXTERNAL EFFECTS ON ASEAN ECONOMY

The automotive industry is considered a major contributor to every major economy as well as the world economy. The industry continues to grow steadily (with the exception of a brief slowdown in 2008-2009) with an average growth rate between 2005-2017 of new vehicle sales and registration of 3.4 percent (see Figure 10). With growth comes a vast number of employment opportunities. According to OICA, approximately eight million people are employed in the building of every 66 million vehicles, including making both the vehicles and relevant auto parts. With a 2017 total global unit sales/new vehicle registration for passenger cars and commercial vehicles with at least four wheels of 97.3 million units (OICA, 2017), the industry reported 735.4 million people in direct employment, which accounted for more than 1.6 percent of the global employment in manufacturing (International Labour Organization, 2017).

Figure 10: Number of new vehicle sales or registration (Global - all types)



Source: OICA

Since motor vehicles are made from several materials, the industry is therefore linked to a diverse array of related and supporting industries including steel, iron, aluminum, glass, plastics, carpeting, textiles, electronics, rubber, and more, providing immense employment opportunities worldwide.

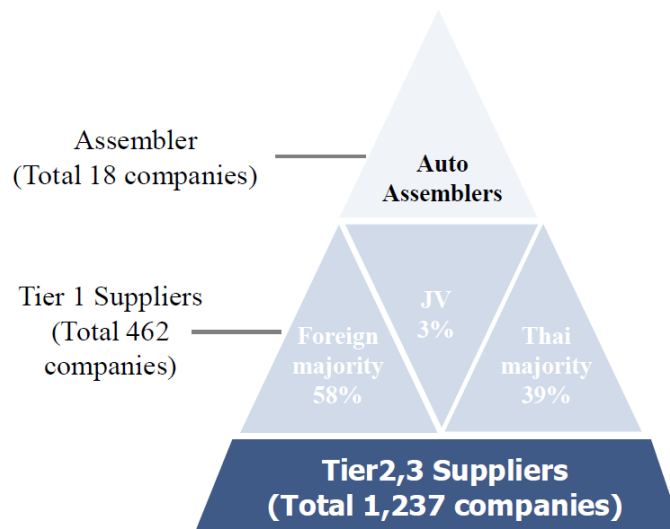
The AMSs that have significant automobile and parts manufacturing industries certainly benefit from the industries, which significantly contribute to their economic growth. In 2016, the automotive industry contributed to 12 percent of GDP in Thailand (ASEAN Briefing, 2017), 9.4 percent in Indonesia (Bloomberg, Mirae Asset Sekuritas Indonesia Research, 2017), and 4 percent in Malaysia (The Automotive Industry, 2017).

1.5 PROPORTION OF SMES

Small and medium-sized enterprises (SMEs) are a major driver of the economy in most countries around the world, including AMSs. SMEs account for 96 percent of all enterprises in the ASEAN region and contribute between 50 and 85 percent of employment in AMSs (Srisattayakul & Noiwiwong 2017). In line with the world economy, ASEAN SMEs have enjoyed a strong growth in the past couple of years, especially in exporting to ASEAN countries. In Thailand, for instance, the Ministry of Commerce reported in July 2018 that, due to a sharp rise in demand, Thai exports to Asian countries increased significantly. In the first quarter of 2018, the outputs of Thai SMEs grew by six percent to US\$53.54 billion, accounting for 42.8 percent of Thailand's GDP (The Nation, July 2018).

In the case of Thailand, the Kasikorn Research Center estimates that about 40 percent of businesses (more than 600 enterprises) in the Thai automotive industry are SMEs. The majority are Tier 2 and Tier 3 suppliers, with only a small portion that are first tier suppliers. It should also be noted that the majority of the enterprises (91.1 percent) are local investments (The 2012 Business Trade and Industrial Census). In Indonesia, the proportion of SMEs is even higher, accounting for more than 90 percent of Indonesian enterprises. Most SMEs in the industry do not have the ability to take part in production using medium to high technology. They are mainly subcontractors for specific auto parts for large foreign enterprises such as Toyota and Honda. The situations are similar in other AMSs.

Figure 11: Thailand Automotive Structure



Source: Automotive Institute of Thailand (obtained by Thailand Board of Investment as of December 2016)

The biggest change in the global automotive industry is in new technologies, especially the market's transition to EVs. Other innovations include autonomous driving and new mobility services. These changes will unavoidably affect SMEs in the near future. Innovation is the key to these changes, which is readily recognized by the ASEAN governments. In Thailand, where the industry relies heavily on the export of auto parts, SMEs need to respond fast and invest in new technologies and innovations to add value to their products. It is expected that SMEs that produce parts and components for electric systems and the suspensions of vehicles (approximately 25 percent of SMEs in the automotive industry) will be affected by the changing needs of the vehicle parts market. Meanwhile, despite being the most advanced motor vehicle producer ASEAN, Thailand is still

considered not ready to be a base for EV manufacturing, since the country lacks investment in EV parts manufacturing and assembly (Kasikorn Research Center, 2017). This problem, however, is being addressed by the Thai government's industry development strategies.

1.6 GOVERNMENT POLICIES

The rules and regulations among the ASEAN countries used to be complicated and varied from one country to another as a result of trade barriers. Since the implementation of the AEC in 2015, cross border trade regulations and procedures have gradually been harmonized and industries in the region have become more standardized. Tariffs have been eliminated or greatly reduced for several products. From January 1, 2018, under the ASEAN Free Trade Agreement, import taxes on automobiles imported from AMSs with a localization rate of at least 40 percent have reduced to zero percent for Completely Built Units (CBU). Furthermore, industry experts expect that non-trade barriers, such as Malaysia's National Automotive Policy (NAP) and Vietnam's 116/2017/ND-CP measure requiring all imported CBU to be tested lot by lot in Vietnam, will be gradually reduced through negotiations by the relevant AMSs.

In addition to import and export tax issues, the automotive industry requires numerous standards concerning the environment and safety. Commonly known environmental standards are the European emission standards, which define acceptable limits for exhaust emissions of new vehicles. The standards have different versions; different ASEAN markets require compliance with different versions. For example, firms that export cars to Vietnam between 2018 and 2021 are required to produce motor vehicles under Euro 4 emission standards and under Euro 5 from 2022 onwards (Vietnam Briefing, 2018). On the other hand, Indonesia now requires Euro 2 emission standards as a minimum. However, the Indonesian authorities plan to impose a requirement for Euro 4 emission standards in September 2018. In the United States, the U.S. EPA sets federal emission standards, whereas certain states like California have adopted stricter standards. The U.S. also has separate legislation for fuel consumption standards, the Corporate Average Fuel Economy (CAFE).

Likewise, manufacturers are required to comply with different vehicle safety standards in each major world market. For instance, the U.S. has the Federal Motor Vehicle Safety Standards (FMVSS), while Canada uses Canada Motor Vehicle Safety Standards (CMVSS). Japan, Australia, India, China and other countries have their own regulations that are adapted from the United Nations Economic Commission for Europe (UNECE) automotive regulations (Thailand Automotive Institute, 2018).

ASEAN held a regional cooperation program on car safety in 2011 called "New Car Assessment Program for Southeast Asian Countries" (ASEAN NCAP). This was in response to the United Nations' Decade of Action for Road Safety 2011-2020. It is a collaboration between the Malaysian Institute of Road Safety Research (MIROS) and Global NCAP and was funded by Global NCAP in the first phase. Seven new car models sold in the region were tested in 2013. The ASEAN program began with two assessments: Adult Occupant Protection (AOP) and Child Occupant Protection (COP). ASEAN aims to raise standards for vehicle safety as well as build consumer awareness through the ASEAN NCAP program.

There has been an effort to harmonize the European standards and the U.S. standards and develop common worldwide standards. The United Nations World Forum for Harmonization of Vehicle Regulations, a working party that works on regulations for vehicle safety, environmental protection, energy efficiency, and theft-resistance, sets safety standards for motor vehicles and provides a legal framework that member states may apply voluntarily. Under this working group, the Worldwide Harmonized Light Vehicle Test Procedure (WLTP) has been developed and is being used in the EU with an aim to expand to worldwide use. However, the main obstacle to worldwide harmonization is the different testing procedures in different countries.

In terms of environmental standards, AMSs have different preferences for “cleaner cars and fuels.” In 2016, the Thai government announced new excise taxes to promote the use of E85 gasohol, reduce CO² emission, and increase fuel efficiency. Other announced measures included income tax exemption for a fixed period and excise tax and other tax incentives to promote the production of eco-cars. Thailand’s Board of Investment also waived import tariffs and provided incentives for battery electric vehicle (BEV) production (Koushan Das, 2017). In 2018, the import taxes for the BEV product group will be reduced to zero percent under the ASEAN - China Free Trade Agreements (Thailand Automotive Institute, 2018).

Table 2: Policies and regulations in key ASEAN markets

Thailand	
Emission& Safety Standards	Tax & Tariff
<ul style="list-style-type: none"> • Thai emission regulations are based on UNECE standards and test procedures • Light Duty Vehicles - Euro 4 • Heavy Duty Diesel Engines - Euro IV • Passive and active safety standard is based on UNECE standards 	<ul style="list-style-type: none"> • The tariffs applied to cars - 80%, trucks - 40%, auto parts (HTS 8407-08 and 8708) - 30% • Value Added Tax - 7% • Municipal Tax - 10% • Excise Tax based on carbon dioxide emission, range from 10% to 50%
Import Restrictions/ Requirements	Other Government Policies
<ul style="list-style-type: none"> • Thailand employs high tariff barriers to protect the local production industry and foreign investment. Tariff rates are structured to promote growth in the local industry. • Imports of used automobiles are not allowed under any circumstances. • Imports of buses with 30 seats or more are not allowed. • Every automobile must come with a technical report verifying its compliance with applicable environmental standards. 	<ul style="list-style-type: none"> • To promote foreign investment, incentives are given to foreign investors to promote the establishment of the local manufacturing industry. • Under Thailand 4.0, the government specifically promotes innovations and advanced technologies in various sectors, including automotive. Incentives are provided for investments in Special Economic Zones (SEZs). • According to Thailand’s Investment Promotion Act B.E. 2559, 13 years of incentives will be offered on corporate income tax and import duty exemptions to enhance industry competitiveness.
Indonesia	
Emission& Safety Standards	Tax & Tariff
<ul style="list-style-type: none"> • Gasoline vehicles - Euro 2 • Diesel vehicles - Euro II • All new gasoline vehicles must meet Euro 4 emission standards starting in September 2018 and all new diesel vehicles to meet 	<ul style="list-style-type: none"> • Import tariffs for CBU are 65-80% for passenger vehicles, 45% for commercial vehicles, 5-45% for pickup trucks and buses, 25% for non-passenger car kits, and 15% for components and parts imported for local assembly of passenger cars

Euro 4/IV emission standards starting in April 2021.	<ul style="list-style-type: none"> In 2014, the Indonesian government increased the vehicle luxury tax from 10%-75% to 10%-125%.
Import Restrictions/ Requirements	Other Government Policies
<ul style="list-style-type: none"> SNI regulation, the current standard certification, mandates certification of the following vehicles components: laminated safety glass, tempered safety glass; tires for passenger cars, trucks, buses; light truck tubes, tire, and rims; motor cycle helmets, rims, tires, and tubes. In order to maintain certification every year, companies must have onsite inspections at production facilities. 	<ul style="list-style-type: none"> Promoted Low Cost Green Car and Low Carbon Emission Program (LCGC & LCEP) LCGC: 20 km./L. GV 1.0-1.2 cc., DV1.0-1.5 cc. Luxury car tax reduced to 0% from current rate of 10% LCEP: FE 20-28 km/L: 25% reduction (currently 20%-75%) - FE 28 km/L and more: 50% reduction (currently 20%-75%) - Electric vehicles: 0%
Malaysia	
Emission& Safety Standards	Tax & Tariff
<ul style="list-style-type: none"> Gasoline vehicles - Euro 4 Diesel vehicles - Euro 2 Motorcycles - Euro 3 	<ul style="list-style-type: none"> Import taxes for auto parts classifications under: <ul style="list-style-type: none"> HTS 8407 ranges from 5% to 30% import rate and 6% sales tax HTS 8408 0% import rate and 6% sales tax HTS 8708 ranges from 5% to 30% import rate and 6% sales tax
Import Restrictions/ Requirements	Other Government Policies
<ul style="list-style-type: none"> Approved Permits (AP), issued by the Ministry of International Trade and Industry (MITI), act as a control mechanism limiting the number of cars imported into Malaysia. A gazette was published, based on the Malaysian Customs Act 1967, in 1983 as a measure to protect the National Cars: PROTON and PERODUA. Local content requirements are 30% - 45% for non-national cars and 80% for national cars, and the local content requirements for non-PROTON assemblers include 30 mandatory items. 	<ul style="list-style-type: none"> NAP 2014 EEV (Energy Efficient Vehicles) means efficient with CO2/km. and fuel consumption (incl. ICE, Hybrid, EV, CNG, LPG, Biodiesel, Ethanol, Hydrogen, Fuel cell)

Philippines	
Emission& Safety Standards	Tax & Tariff
<ul style="list-style-type: none"> • New passenger vehicles and light duty vehicles - Euro 4 • New heavy duty vehicles - Euro IV • New motorcycles/ tricycles and mopeds - Euro 3 	<ul style="list-style-type: none"> • Imported vehicles are subject to 40% customs duty, 10% VAT and Ad Valorem Tax from 15% to 100% depending on piston displacement. • House Bill 5636 (Tax Reform for Acceleration and Inclusion) which seeks to levy heavier excise rates on automotive industry, was passed to compensate for the lowering of income taxes and generate income for public coffers.
Import Restrictions/ Requirements	Other Government Policies
N/A	N/A
Vietnam	
Emission& Safety Standards	Tax & Tariff
<ul style="list-style-type: none"> • 4-wheeled light duty gasoline vehicles - Euro 4 • Diesel vehicles - Euro IV • Two- and three-wheelers - Euro 3 • Euro 5 standards will come into effect in 2022 	<ul style="list-style-type: none"> • Taxes: <ul style="list-style-type: none"> - Special Consumption Tax (SCT) from 15% - 50% - Value Added Tax (VAT): 5% for all vehicles • Tariffs: <ul style="list-style-type: none"> - CBU MFN rate: 70% for all vehicles - CBU passenger cars are still on the General Exception list (GE) • The latest proposal of CEPT Roadmap to reduce AFTA rates for CBU passenger cars which is approved by the Prime Minister is: <ul style="list-style-type: none"> - CBU vehicles with 10 to 30 seats: 20% (2007) and 5% (2009) - CBU vehicles under 10 seats: 20% (2008) and 5% (2010) - CKD MFN rates, scheduled to increase 5 to 10 points per year, appear to be holding at 25% and rising for passenger cars and PPV and 15% and rising for minivans/bus, pickups, and trucks equal or less than 5 tons - MFN rate for all used autos and trucks not exceeding 5 tons: 150%
Import Restrictions/ Requirements	Other Government Policies
<ul style="list-style-type: none"> • Decree 116 requires lot by lot testing of CBU with the aim to support CKD. 	N/A

<ul style="list-style-type: none"> • Even when vehicle type approval (VTA) is available, each shipment of vehicles, even though the same model entering the port, must be inspected to ensure they meet standards. 	
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1.7 CLUSTER MOBILIZATION

According to the current situation and ongoing development in the ASEAN automotive industry across the region, the sector has good potential to grow in AMSs on all fronts, from vehicle sales to auto parts supplies and exports. However, performance will vary greatly from country to country. The discrepancies will be more obvious in the AMSs with less developed automotive industries such as Cambodia, Laos PDR, and Myanmar, while the industries in the ASEAN's top five (Thailand, Indonesia, Malaysia, the Philippines, and Vietnam) are expected to continue to grow in line with the growing middle class and increasing consumption power in each country. Nonetheless, ASEAN has tried to forge stronger collaboration among member countries in an effort to build a strong economic region.

The ASEAN automotive industry has its foundation in being an assembly base for Japanese carmakers. Today, the region continues to bring in large foreign investments with attractive incentives, relatively abundant labor supply at reasonable costs, a sizeable regional market with increasingly affluent consumers, low costs of living, and growing city centers across the region. The industry relies heavily on FDI as well as technologies from large automotive firms that invest in the region. These large firms, especially firms from Japan, plan their manufacturing focus according to the nature of local market demands. For example, Thailand is the base for one-ton pick-up trucks, Indonesia is the manufacturing location of MPV and SUV passenger cars, and Malaysia produces more sedan cars. These car models are then distributed throughout the region, taking advantage of ASEAN's free trade arrangements among member countries.

The global automotive industry benefits from many production factors in ASEAN. The ASEAN governments continue investing in infrastructure to enhance their competitiveness. A notable example is Thailand's Eastern Economic Corridor (EEC) development plan that promotes prioritized industries. Skilled and semi-skilled labor supplies are available at reasonable costs, although the need to upgrade workers' skills is predicted to be more urgent in the near future as the industry continues its transformation towards more robotic and automated applications and EVs become more popular and affordable.

In terms of supporting industries, many AMSs have high capacity in many industries, like rubber, electronics, and petrochemicals. Indonesia and Thailand are big producers of rubber and rubber products. Malaysia is a strong player in the electronics and petrochemical industries. Singapore is a trading hub and a leading financial center. Vietnam and Cambodia are leading producers and exporters of textile and apparel products with some applications in the automotive industry.

The ASEAN governments work together in reducing trade barriers through the ASEAN Economic Community (AEC) structure and intra-regional free trade arrangements, which have enabled automakers to manage their regional supply chains more efficiently by moving vehicle parts and finished products across the region. Nonetheless, non-tariff barrier (NTB) measures still exist to protect local investment, but are expected to decrease as AMSs increase their efforts to meet AEC requirements. The ongoing policies of ASEAN governments to promote advanced technologies in automobile production and fuel-efficient and electric vehicles provide a clear direction for businesses in their investment and management decisions. It should be noted, however, that due to the large investment requirement and early market readiness resulting from high prices, the EV

markets in the region are expected to take time to develop and for a period of time to pass before electric vehicles are widely used by average consumers.

The automotive industries in the five leading ASEAN countries are analyzed below for their potential for mobilizing cluster development to increase industry competitiveness using Porter's Diamond model.

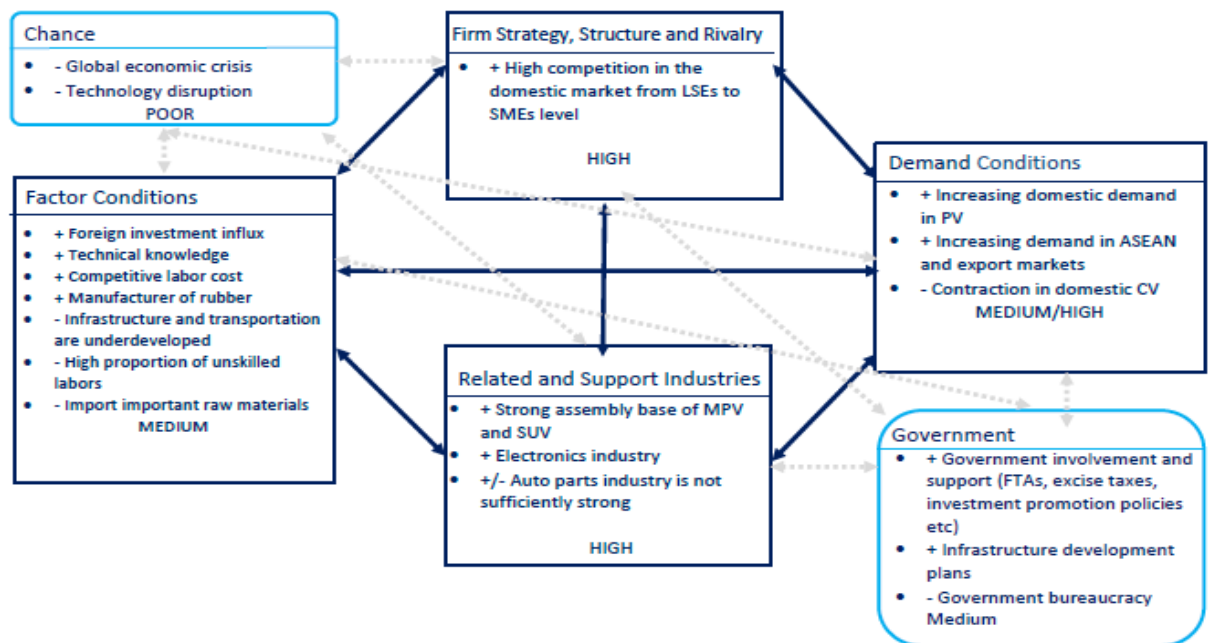
Indonesia

Being the largest motor vehicle market in ASEAN with increasing domestic demand, especially in the passenger vehicles segment, Indonesia has a highly competitive domestic market with a large number of manufacturers dominated by Japanese automakers and parts suppliers. Indonesia attracts FDI in its automotive industry due to the country's large population, competitive labor costs, and long experience in the auto assembly industry, particularly in the MPV and SUV segments. Nonetheless, to maintain industry competitiveness Indonesia needs to develop a more extensive, modern infrastructure network to tackle chronic problems in overcrowded cities like Jakarta and overcome the country's vast, archipelagic geography, upgrade the skills of a large portion of its workforce that lacks advanced technical skills, and address government bureaucracy that has been perceived as an obstacle for business (Global Competitiveness Report, 2017-2018).

Figure 12: Potential for mobilizing cluster development (Indonesia)

Potential for mobilizing cluster development: a competitive advantage analysis using Porter Diamond Model

Indonesia Automotive Industry



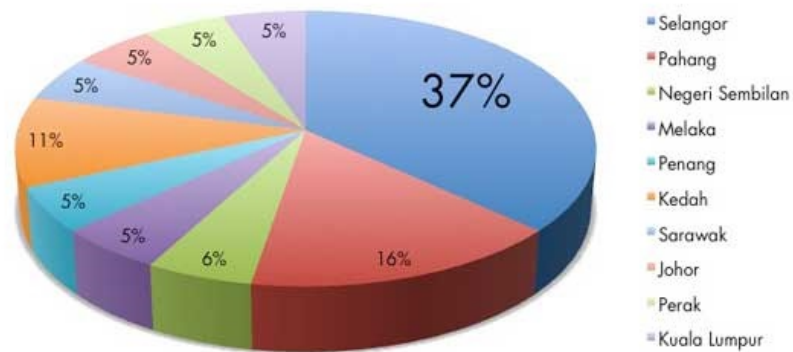
Indonesia has a thriving automotive manufacturing center in Karawang city in West Java while the Indonesian government is promoting two new automotive hubs in Kendal city in Central Java and Gresik city in East Java in order to bypass the worsening problems of high industrial land prices and fast rising minimum local wages in Karawang (Indonesia Investments, 2017).³

The government supports the automotive industry through promotion policies to attract foreign investments, excise taxes, and negotiations in relevant free trade agreements to lower automotive part import costs and expand markets for Indonesian automotive products. It is necessary for the government to continue to play an active role in promoting the competitiveness of the Indonesian automotive industry to strengthen its position both in the ASEAN region and the global markets.

Malaysia

Malaysia is recognized as a highly competitive automotive manufacturing base with efficient and extensive transportation network and infrastructure and an educated workforce with technical knowledge and skills, albeit with relatively high costs. The Malaysian automotive industry has a strong base of related and supporting industries such as plastics and petrochemicals, electronics, rubber, and tires as well as competitive services and financial sectors. Malaysia also has its own oil and gas industry to satisfy the country's fuel and energy needs, although at current production rates the country is expected to deplete its oil reserves after around 2020 and natural gas reserves after 2035.⁴

Figure 13: Share of Automotive Manufacturing and Assembly Plants by States



Source: Invest Selangor, 2018.

The Malaysian government plays a crucial role in developing the nation's automotive industry creating a supportive environment and protective policy, the National Automotive Policy (NAP), to enable the development of domestic value chains that support the establishment of national cars, Proton and Perodua.

Malaysia's automotive clusters are located primarily in the states of Selangor and Pahang and also dispersed in many states throughout the country (see Figure below). In February 2018, DRB-

³ <https://www.indonesia-investments.com/news/todays-headlines/automotive-industry-kendal-gresik-new-manufacturing-hubs/item8257?>

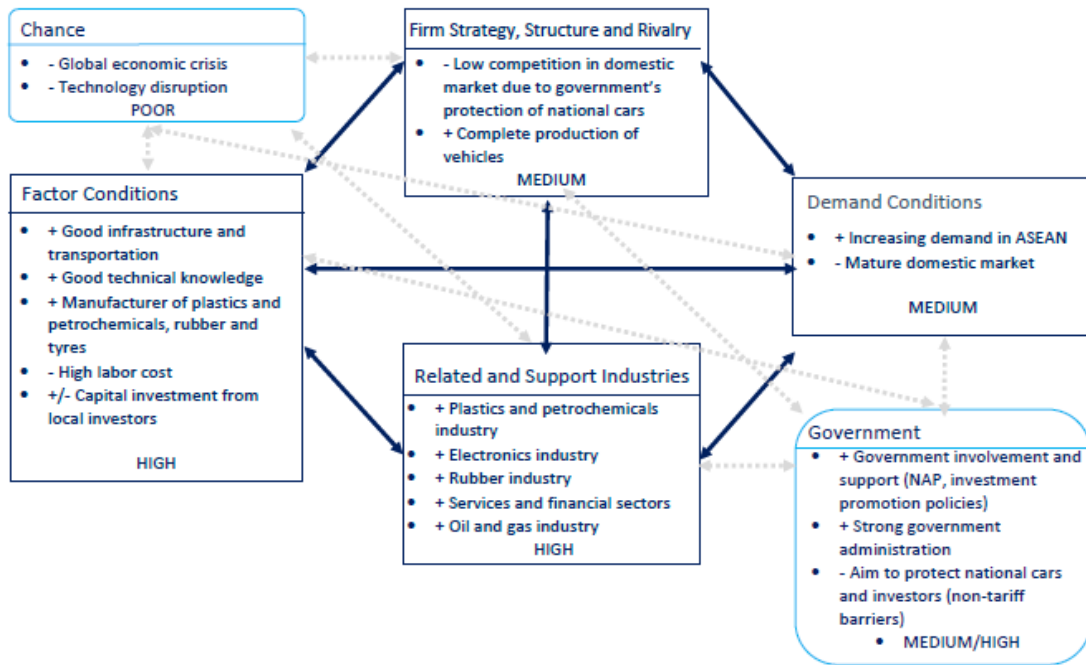
⁴ http://factsanddetails.com/southeast-asia/Malaysia/sub5_4e/entry-3687.html

HICOM Berhad (the owner of Proton) launched a new industrial park, the National Automotive Cluster (NAC) @ Proton City in Tanjung Malim, a town 70 kilometers north of the capital Kuala Lumpur. The area is designated for development to attract both local and foreign automotive investors.

Figure 14: Potential for mobilizing cluster development (Malaysia)

**Potential for mobilizing cluster development:
a competitive advantage analysis using
Porter Diamond Model**

**Malaysia
Automotive Industry**



Philippines

Foreign investors apparently view the Philippines as a favorable investment destination considering the country's sound macroeconomic fundamentals and a favorable economic outlook which resulted in an all-time high foreign direct investment inflows of US\$10 billion in 2017, up by 21.4 percent compared to 2016.⁵ The Philippine automotive industry recorded an all-time high vehicle sales of 473,943 units in 2017, led by commercial vehicle with 306,116 units (64.59%) and passenger cars with the remaining 167,827 units (35.41%). The annual sales figure was a 17.66 percent increase from the previous year and was achieved thanks to the uncertainty and panic over a landmark tax reform law which would impose additional excise taxes in 2018.⁶

⁵ <https://www.rappler.com/business/197962-philippines-foreign-direct-investments-2017>

⁶ <https://www.autoindustriya.com/auto-industry-news/philippine-auto-industry-sets-record-473-943-units-sold-in-2017.html>

Although the majority of vehicle production in the Philippines serves the domestic market, the country registered US\$7.1 million worth of car exports in 2017, a negligible 0.001 percent of the world's total, making the Philippines the 74th largest car exporter in the world.⁷

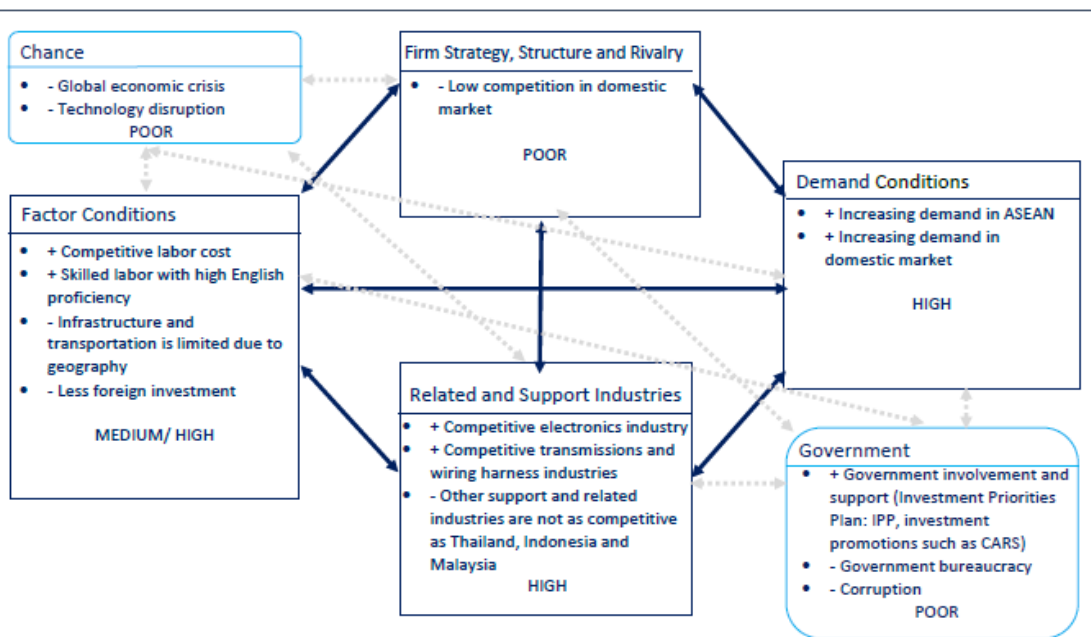
According to the Department of Trade and Industry, the Philippine participation in the automotive global value chain is focused on the production of parts and components, particularly in wiring, electronic components, aluminum components, and the chassis system (drive trains, rolling chassis, wheel and tire assemblies, front and rear end modules, and vibration controls) (Department of Trade and Industry, 2017).⁸

The Philippine government is building the competitiveness of the automotive industry through supportive policies such as making the industry a priority industry in its Investment Priorities Plan (IPP) and the Comprehensive Automotive Resurgence Strategy (CARS) Program aims to attract new investments and stimulate demand, and implementing regulations that will revitalize the automotive industry and develop the country as a regional automotive manufacturing hub. In doing so, the government will need to address some outstanding issues such as corruption and bureaucracy and build the capacities of supporting industries to the automotive industry in addition to those that the Philippines is already strong at.

Figure 15: Potential for mobilizing cluster development (Philippines)

**Potential for mobilizing cluster development:
a competitive advantage analysis using
Porter Diamond Model**

**Philippines
Automotive Industry**



⁷<http://www.worldstopexports.com/car-exports-country/>

⁸<http://industry.gov.ph/wp-content/uploads/2017/11/DTI-Policy-Brief-2017-02-The-Philippines-in-the-Automotive-Global-Value-Chain.pdf>

Thailand

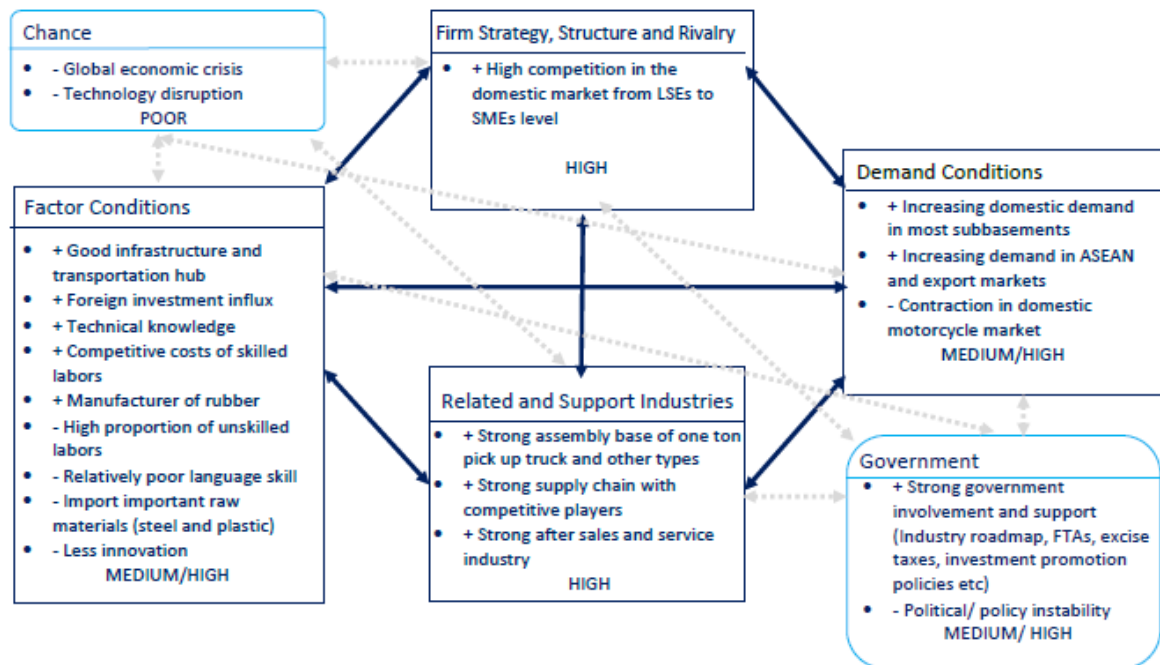
Established since the 1980s, the Thai automotive industry is well developed and connected with clusters of supporting industries in a few well-established locations around Bangkok and in neighboring provinces and the eastern region. Foreign investment flows into the Thai automotive industry due to its competitive operating costs, well-established supplier network, strategic location, and attractive investment incentives. Thai suppliers possess good technical knowledge and long experience supplying to foreign car manufacturers. The automotive value chain in Thailand is complete from parts manufacturers to large, international automakers. Supporting service providers such as car maintenance garages, logistic providers, and financial service providers are relatively competitive and provide essential support to the sector.

The Thai government plays an important role in shaping automotive clusters. Thailand imposed local part sourcing and localization requirements that helped establish the industry in the early stage and subsequently expanded the local market with trade liberalization policies (Kuroiwa and Techakanont, 2017). The government intentionally increased domestic demands for certain types of vehicles through excise tax policies and specifically the “first-car buyer” scheme in 2012. The Board of Investment’s incentive measures for foreign and local investors to locate production facilities in specially designated industrial zones also play an important role in the successful establishment of automotive clusters in Thailand.

Figure 16: Potential for mobilizing cluster development (Thailand)

Potential for mobilizing cluster development: a competitive advantage analysis using Porter Diamond Model

Thailand Automotive Industry



Vietnam

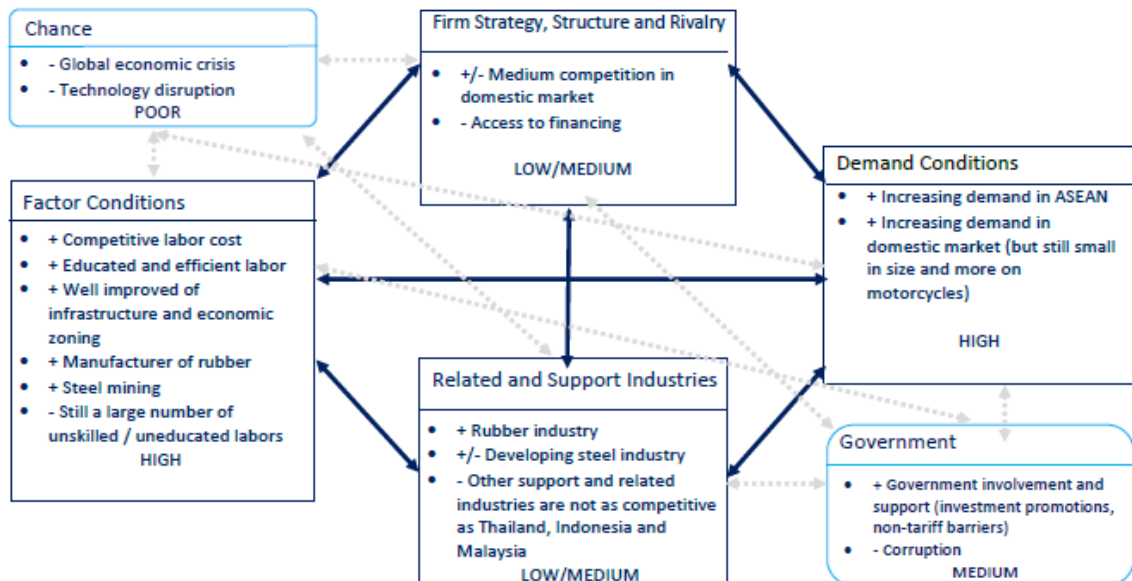
Although Vietnam is relatively new in the automotive market, the country has been successful in attracting foreign investments into its automotive and other manufacturing industries through the government's conducive policies and the country's low cost yet productive workforce and abundant natural resources including rubber and steel. In order to fulfill the needs of its booming manufacturing sector, the Vietnamese government is working hard to improve the country's infrastructure and implement economic policies that are conducive to industry growth.

Although the domestic automotive market in Vietnam is still relatively small with more demand for motorcycles, the country has enjoyed a foreign investment boom in the last few years due to a comparatively large population of 96.7 million, according to the latest United Nations estimates, and fast growing, increasingly affluent middle class—the Boston Consulting Group projects Vietnam's "middle and affluent class" to double to 33 million people by 2020. In addition, the Vietnamese government is working on three "strategic breakthroughs": putting in place market economy institutions and a legal framework, building an advanced and integrated infrastructure, and developing a quality workforce (World Economic Forum, 2014).⁹

Figure 17 : Potential for mobilizing cluster development (Vietnam)

Potential for mobilizing cluster development: a competitive advantage analysis using Porter Diamond Model

Vietnam Automotive Industry



⁹ <https://www.weforum.org/agenda/2014/05/foreign-investment-booming-vietnam/>

The Vietnamese government is directly involved in developing automotive clusters by introducing favorable investment promotion measures and improving legal framework and institutions related to business and investment. Through these measures, the country has been successful in attracting an impressive number of global automotive companies such as Chevrolet, Ford, Honda, Hyundai, Mazda, Mitsubishi, Toyota, and many others.

In order to build a larger and more comprehensive automotive value chain and ensure that the Vietnam automotive industry can compete on a more equitable basis with its more advanced ASEAN neighbors like Thailand, Indonesia, and Malaysia, the Vietnamese government will need to invest more to upgrade the technical skills of its workforce and encourage more investments in the supporting industries that are linked with the automotive industry.

1.8 VALUE CHAIN LINKAGES

The world's leading automobile companies have transformed the global automotive value chains into a complex network consisting of car-making companies with their own brands, assemblers, and suppliers of different tiers outsourcing parts at many levels. The players in the automotive value chains can be categorized as standardizers, material suppliers, component specialists, integrators, assemblers, and distributors. Through trade liberalization, developing countries have been able to become part of global value chains (GVCs). In ASEAN, preferential trade arrangements, such as the ASEAN Free Trade Area (AFTA) and ASEAN+6¹⁰ framework, have enabled the industry value chains to expand by allowing parts to be sourced from AMSs and from the additional six countries with no or reduced tariffs. Also, some processes of production can be done across borders for increased cost efficiency. For instance, an OEM firm located in Thailand exports materials to produce certain parts in Cambodia, then exports the processed parts back for final assembly in Thailand (UNESCAP, 2013).

During the past two decades, the global automotive industry has significantly transformed as a result of trade liberalization, globalization, and the change in relationships between auto assemblers and suppliers. As global automotive companies invested in car assembly facilities in developing countries, including in ASEAN, vehicle parts and components suppliers also followed into the region, resulting in an extensive regional production network with links to global networks.

The ASEAN automotive industry has developed for more than 30 years, beginning in Thailand in the 1980s. Big Japanese automotive investors then expanded their markets and supply chains to neighboring countries. One example is Toyota's complementary supply system, which bases manufacturing facilities in some countries and purchases parts from other countries, such as diesel engines from Thailand, transmissions from the Philippines, steering components from Malaysia, etc. The industry's value chains became internationalized, driven by trade liberalization and the ASEAN establishment (Kuroiwa, 2017).

While the automotive industries in the ASEAN-5¹¹ have developed for decades, the CLMV¹² countries entered the scene much later due to each country's own political and economic reasons. Their manufacturing sectors are generally in the beginning stages and the automotive industries are less developed. The exception is Vietnam, which has been able to attract more FDI and develop many sectors more rapidly. Major carmakers and OEM manufacturers from the US, Japan, Europe, and Korea are beginning to have a presence in the CLMV countries, especially in Vietnam, which

¹⁰ ASEAN+6 comprised of the 10 ASEAN member countries plus China, Japan, South Korea, India, Australia, and New Zealand.

¹¹ ASEAN-5 refers to the original ASEAN members except Brunei consisting of Indonesia, Malaysia, the Philippines, Singapore, and Thailand.

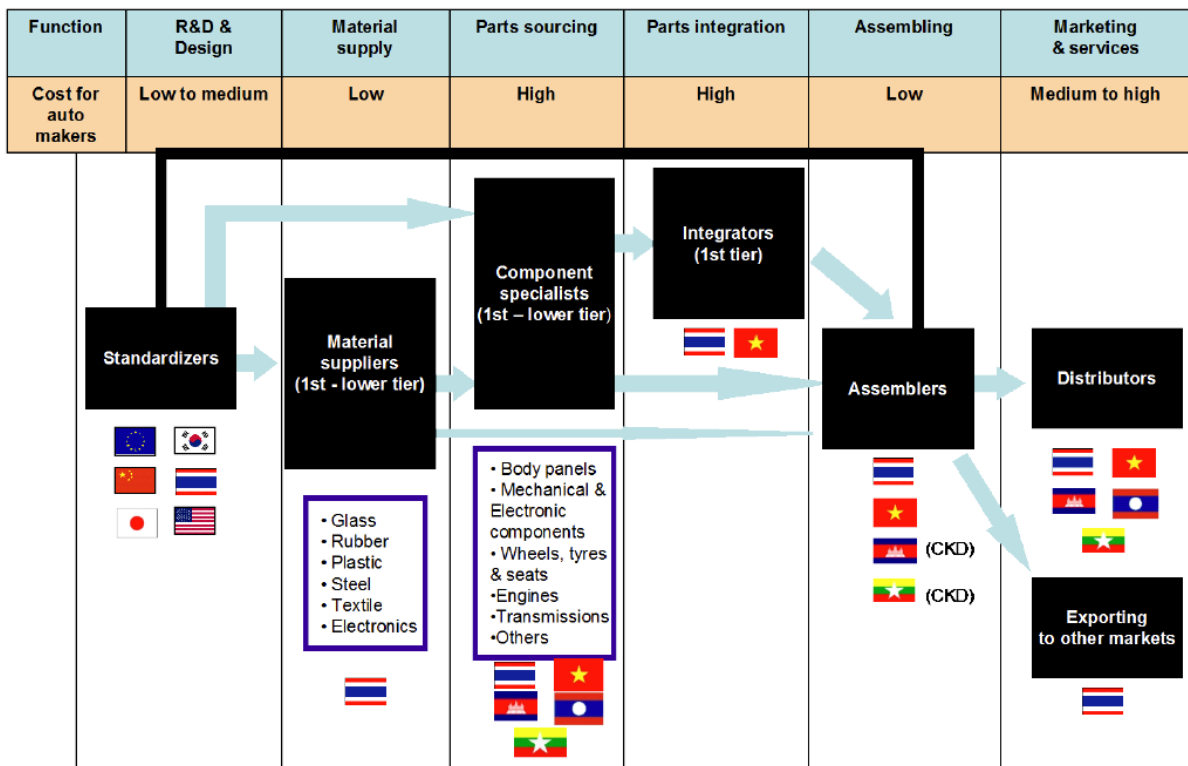
¹² CLMV refers to Cambodia, Laos PDR, Myanmar, and Vietnam.

links these countries to the ASEAN-5, where automotive markets are larger and production facilities are more established.

Among the CLMV countries, Vietnam's automotive industry is the most advanced, though its current car and truck markets are relatively small compared to the motorcycle market. Vietnam Automobile Manufacturers' Association (VAMA) reported a total of 17 vehicle manufacturers, including big players such as Ford, General Motors, Toyota, Honda, and Suzuki. There are a number of local manufacturers, such as Truong Hai Auto, Vina Motor, and VinFast, which bought a General Motors' production plant in 2018. Vietnam currently imports both finished motor vehicles and CKD parts and several other components from more advanced regional producers, mainly Thailand, as its automotive operations is now limited to CKD assembling.

Cambodia, Laos and Myanmar have much smaller roles in the ASEAN value chains. Foreign automotive firms invest in satellite plants near Thailand's border to benefit from low labor costs in these countries. The operations at these plants, like producing wire harnesses and castings, are labor intensive and less complex. Some examples of these operations include Sumitomo's wire harness facilities near the Thai border and Denso's electronic parts operation near the Cambodian border (Kobayashi & Jin, 2014).

Figure 18: A simplified global automotive value chain



Source: UNESCAP, 2013

1.9 POLICY RECOMMENDATIONS

As the world automotive markets are in a critical transition period, the ASEAN automotive industries need to become more competitive in order to retain their shares. Although Thailand, Indonesia, and Malaysia are the most developed in automotive production and have sufficient capabilities to compete in the world markets, each country will benefit more from working together as a regional production hub.

A number of policy recommendations can be proposed for ASEAN governments based on industry and market analysis.

- 1) **Develop Technology through FDI** – The future vehicle trends will move towards fuel efficient vehicles and EVs. Current production facilities in ASEAN are still heavily focused on vehicles using combustion engines with some early investments in hybrid vehicles. AMSs have relied heavily on foreign technologies through FDI in their existing facilities. To follow industry trends, ASEAN governments will need to continue to rely on foreign technologies and focus on attracting FDI to invest in the technologies required to keep pace with global competition. This could be done through tax exemptions, lower tariffs, and other investment promotion privileges. Only by obtaining technology transfer through FDI can the ASEAN automotive industries maintain their competitiveness.
- 2) **Develop Labor Skills** – With the introduction of next generation vehicles, the requirement for qualified engineers and skilled mechanics and technicians who can work with the relevant new technologies will certainly increase. While skilled labor supply for current operations in countries like Thailand is still sufficient, shortage of skilled labor is predicted (Thailand Automotive Institute). The ASEAN governments need to anticipate and invest in building the skills in their workforces that will be required by the future industries.
- 3) **Harmonize Taxes, Tariffs, and Standards** – The importance of regional linkages to enhance competition demonstrates the need for ASEAN governments to increase the pace of their collaboration in order to reduce intra-regional trade barriers and facilitate easy flow of goods across the region, thereby opening more opportunities for efficient supply chain management by automotive manufacturers. Relevant rules, regulations, and safety standards related to automotive production need to be standardized across the region to make ASEAN a truly strong economic community.
- 4) **Promote Investment in R&D** – To compete in the international markets, innovations are a key factor. The ASEAN governments need to promote and facilitate investment in research and development to create innovations that can add value to the industry across the entire value chain.

2. FOOD AND AGRICULTURE INDUSTRY

2.1 INDUSTRY OVERVIEW

The ten ASEAN nations combine to export a total of US\$112 billion worth of agriculture commodities and products (aquaculture excluded) while importing US\$98 billion.¹³ The region is highly competitive in a number of global agricultural value chains, controlling a commanding global share in palm oil, rubber, coconut oil and cassava (Table 3). In addition, the region's staple crop rice accounts for nearly 35 percent of global exports.

The region is endowed with rich soil and an ideal climate for a range of crops, as well as has access to rivers and oceans that are home to substantial fisheries. These resources combined with a largely rural population have resulted in agriculture and fisheries being a vital source of employment for people in ASEAN nations, with the exception of Singapore, Brunei and, to a lesser extent, Malaysia. The sectors' contribution to employment, however, has declined in ASEAN over the past 20 years as more and more people have moved to other economic sectors.¹⁴

Although agriculture remains an important source of employment, the sector is unproductive compared to other sectors. Agriculture contributes less than 15 percent to the GDP of all ASEAN-6 countries.¹⁵ The less-developed industrial sectors in Cambodia, Lao PDR, Myanmar and Vietnam (CLMV) are a primary reason why agriculture remains a significant, though declining, sector and contributor to GDP. Since 1991, total factor productivity (TFP) for ASEAN has increased by 2.2 percent per annum; however, this is due in large part to expanded agricultural land use.¹⁶

Thailand, Indonesia and Malaysia have the most substantial export-oriented agribusiness sectors among the ASEAN countries.¹⁷ Of the three, only Malaysia has substantial inputs from other ASEAN countries. Intra-ASEAN value chain linkages appear to be weak. An OECD-FAO report indicates "the region has strong agro-food global value chain (GVC) linkages to countries in other parts of Asia and to Europe. However, there appear to be significant gaps in regional inter-linkages with exception of some specific country links, such as Indonesia-Malaysia, and Cambodia and Lao PDR to Vietnam."¹⁸ This finding indicates that regional agricultural value chain linkages are immature and have potential to grow.

Table 3: Overview of ASEAN market share

Crop/Product	Year	Measure	Unit	Value	Global Share
Oil, palm	2016	Export Value	1,000 US\$	23,547,501	85.0%
Fruit and Vegetables	2016	Export Value	1,000 US\$	13,806,304	5.9%
Rubber natural dry	2016	Export Value	1,000 US\$	8,777,222	84.9%
Rice - total (Rice milled equivalent)	2016	Export Value	1,000 US\$	7,139,922	34.8%
Coffee, green	2016	Export Value	1,000 US\$	3,747,634	19.3%
Fatty acids	2016	Export Value	1,000 US\$	3,045,872	61.3%
Oil, palm kernel	2016	Export Value	1,000 US\$	2,815,904	86.9%
Sugar refined	2016	Export Value	1,000 US\$	2,368,169	17.8%
Meat, chicken, canned	2016	Export Value	1,000 US\$	2,291,971	29.1%

¹³ FAOSTAT, 2016 data.

¹⁴ *OECD-FAO Agricultural Outlook 2017-2026: Southeast Asia: Prospects and challenges* (Rep.). (2017). OECD/FAO.

¹⁵ ASEAN-6 refers to the original six members of ASEAN (Brunei, Indonesia, Malaysia, the Philippines, Singapore, and Thailand).

¹⁶ *OECD-FAO Agricultural Outlook 2017-2026: Southeast Asia: Prospects and challenges* (Rep.). (2017). OECD/FAO.

¹⁷ *Global Value Chains in ASEAN: A Regional Perspective* (Rep.). (2017). ASEAN-Japan Centre.

¹⁸ *OECD-FAO Agricultural Outlook 2017-2026: Southeast Asia: Prospects and challenges* (Rep.). (2017). OECD/FAO.

Crop/Product	Year	Measure	Unit	Value	Global Share
Oil, coconut (copra)	2016	Export Value	1,000 US\$	2,178,201	74.5%
Cashew nuts, shelled	2016	Export Value	1,000 US\$	2,075,907	55.4%
Pepper (piper spp.)	2016	Export Value	1,000 US\$	1,559,064	56.5%
Cassava dried	2016	Export Value	1,000 US\$	1,423,184	96.5%
Coffee, extracts	2016	Export Value	1,000 US\$	1,407,893	20.0%
Cocoa, butter	2016	Export Value	1,000 US\$	1,378,712	27.4%
Starch, cassava	2016	Export Value	1,000 US\$	1,371,518	96.4%
Rubber, natural	2016	Export Value	1,000 US\$	1,277,488	86.8%
Sugar Raw Centrifugal	2016	Export Value	1,000 US\$	1,151,670	7.9%
Pineapples canned	2016	Export Value	1,000 US\$	1,126,942	82.5%
Pet food	2016	Export Value	1,000 US\$	1,071,514	9.1%

Source: FAOSTAT

2.2 PROPORTION OF SMES

Small-plot farms tend to dominate the ASEAN landscape.¹⁹ In certain cases, such as canned pineapples in Thailand, farmers can be integrated into value chains through contract farming. On the other hand, some farmers, particularly in CLMV, are only capable of subsistence-level production.²⁰ In some cases, governments could do more to support small-plot farmers in connecting to value chains through the provision of extension programs, financial services, and improved infrastructure (roads and irrigation). As food and agriculture GVCs consolidate, it is difficult for SMEs to compete with large domestic firms and multi-national corporations.²¹ The competitiveness of SMEs within the agribusiness and food processing sectors are limited due to lack of finance, low productivity, and the use of outdated technology, with a few exceptions of small modern farmers who have training in modern agricultural practices and technologies and are able to apply the latest practices and technologies to their farming operations. An example is the Dare to Return initiative in Thailand where a grassroots network of experienced farmers has developed a smart agricultural community and encouraged young people who migrated to the cities to return and develop their rural hometowns with innovative farming technologies.²²

Meeting international standards and food safety requirements presents significant challenges for SMEs. In a 2016 White Paper, the EU-ASEAN Forum on Food Safety stated that SMEs “often suffer from a lack of knowledge of food processes and innovation and of food safety in general. In this way, SMEs are clearly at a disadvantage in the general process of introducing harmonized (and often more stringent) legislation in relation to food production²³.” Although harmonization of food standards is needed for ASEAN to increase its agribusiness exports, and is the clear direction of ASEAN policy (see below), adopting more stringent standards may not help SMEs, which tend to have lower capacity and limited access to information about export standards, as much as large corporations.

¹⁹ OECD-FAO *Agricultural Outlook 2017-2026: Southeast Asia: Prospects and challenges* (Rep.). (2017). OECD/FAO.

²⁰ *Unlocking the Opportunities for Crop Science Products in CLMV* (Rep.). (2017). Ipsos Business Consulting.

²¹ *Integrating SMEs into Global Value Chains: Policy Principles and Best Practices* (Rep.). (2014). OECD.

²² *Why young professionals are taking up farming in Thailand*. Retrieved from <https://www.csmonitor.com/World/Asia-Pacific/2018/0702/Why-young-professionals-are-taking-up-farming-in-Thailand>.

²³ *ASEAN Food Safety Developments Continued Harmonization Efforts* (Working paper). (2016). EU-ASEAN Forum on Food Safety.

2.3 CLUSTER MOBILIZATION

The potential for cluster mobilization varies from country to country and from sub-sector to sub-sector. For factor input conditions, Lao PDR, Cambodia and Myanmar have advantages in terms of soil quality over neighboring Vietnam and Thailand because they have not been as exposed to intensive agricultural practices. For food processing, CLMV countries have lower labor costs than the ASEAN-6. Thailand has the advantage of a well-developed agribusiness sector that has proven to be capable of meeting international standards. At the same time, Vietnam, another major food exporter, suffers from its limited capacity to produce high-quality products. Several countries need infrastructure improvements in terms of roads and irrigation systems.

In general, ASEAN countries are experiencing urbanization and a growing middle class. These trends have raised domestic demand for both healthy and processed foods as well as meats and dairy products. Unique demand conditions include aging society in Thailand and Singapore, the massive size of the market in Indonesia and the tiny markets in Singapore and Brunei.

Firm strategies and rivalries vary across ASEAN. Some countries, such as Thailand, Philippines, Singapore and Malaysia, have a number of large domestic firms and multinational corporations (MNCs) that have an outsized presence in the agribusiness sector. Still others, like Lao PDR and Myanmar, have relatively few large, high-capacity enterprises in the sector. Food and agriculture are often seen as separate but interrelated sectors.²⁴ As such, the development of the agriculture sector supports a stronger agribusiness sector, and vice versa. The agribusiness sectors of several ASEAN countries import their inputs, which can be expensive and hinder competitiveness.

2.4 GOVERNMENT POLICY

ASEAN established the ASEAN Economic Community (AEC) in 2015 to increase economic integration among the 10 member states by enabling the free flow of goods, services, labor and capital throughout the region. The ASEAN Trade in Goods Agreement (ATIGA), concurrently, has eliminated nearly all tariffs on trade between ASEAN member states; however, each ASEAN country has unique food standards, leading to a host of non-tariff measures (NTMs) that impede regional agricultural trade.²⁵ There are hundreds of different standards that vary from product to product. For example, Malaysia alone has 471 NTMs in the food sector.

ASEAN has made agro-based products one of its 12 priority sectors for integration and harmonization.²⁶ The ASEAN Blueprint 2025 articulates the need to “enhance trade facilitation, and remove barriers to trade” and “improve productivity, technology and product quality to ensure product safety, quality and compliance with global market standards” to make the agriculture and food sectors more competitive.²⁷ While ASEAN has enunciated the problems related to NTMs and the need to harmonize standards, the reform process has taken a piecemeal approach that will likely take years.

As mentioned above, national standards and regulations vary in individual ASEAN nations. Harmonizing these standards and regulations is challenging because of the sheer number of stakeholders involved. Individual countries, for example, have multiple agencies that are responsible for different parts of the food production system. Regardless of the aforementioned challenges, ASEAN aims to streamline food standards. In 2015, it endorsed the ASEAN Food Safety Policy that has declared becoming consistent with ATIGA and the World Trade

²⁴ *Integrating SMEs into Global Value Chains: Policy Principles and Best Practices* (Rep.). (2014). OECD.

²⁵ Devadason, E. S. (2016, September 10). [Editorial]. *More Harmony Needed in ASEAN Food Standards*. Retrieved from <http://www.eastasiaforum.org/2016/09/10/more-harmony-needed-in-asean-food-standards/>

²⁶ Pettman, S. (2013). *Standards Harmonisation in ASEAN: Progress, Challenges and Moving Beyond 2015* (Rep.). Economic Research Institute for ASEAN and East Asia.

²⁷ *ASEAN ECONOMIC COMMUNITY BLUEPRINT 2025*. (n.d.). ASEAN.

Organization's (WTO) Agreements on Sanitary and Phytosanitary (SPS) Measures and on Technical Barriers to Trade (TBT) as well as harmonization of international standards as two of its 10 core principles.

The SPS Measures mandate that countries must apply science-based regulations to ensure food safety and animal and plant health. The TBT agreement, meanwhile, aims to facilitate free trade by eliminating protectionist NTMs while still allowing states to implement legitimate regulations, such as protecting consumer health or the environment.²⁸ The ASEAN Food Safety Policy also strives to adopt harmonized regional standards that are aligned with "internationally accepted standards," particularly "those issued by the Codex Alimentarius Commission."²⁹ The WTO and FAO jointly issue the Codex standards that cover myriad food products, both raw and processed, to assure consumer safety and fair international trade. Although states that are party to the WTO are permitted to adopt separate or additional standards, they "may be required to justify these measures scientifically."³⁰

It should be noted that conforming to international standards, specifically the TBT and SPS agreements, is a great challenge for SMEs, especially those in developing countries. Many of the challenges in meeting international standards stem from the high costs associated with laboratory equipment and testing.³¹ While large firms can afford such scientific procedures, and may even manage the process in-house, few SMEs have the financial capabilities to perform such assessments. Furthermore, domestic markets in developing countries tend to not have the same emphasis on quality standards. As such, SMEs have less opportunity to build their capabilities locally for such standards. Focusing solely on exports can be too expensive for SMEs.

Clustering, or the formation of robust, sector-specific interconnectivity involving businesses, suppliers, and associated institutions, can help SMEs and businesses in developing countries enhance their export potential. By attaining economies of scale, business clusters can jointly establish testing facilities, share information on foreign markets, and ensure that quality standards are met throughout the value chain. The Vietnam Association of Seafood Exporters and Producers (VASEP) serves as an example of good practices in business collaboration to achieve export-oriented growth.³² VASEP, whose members contribute 80 percent of the country's total seafood exports, has helped Vietnam become one of the world's leading exporters of fish and seafood.

ASEAN member states also follow the ASEAN Integrated Food Security (AIFS) Framework and Strategic Plan of Action on Food Security 2015-2020 to "ensure long-term food security and nutrition [and] to improve the livelihoods of farmers in the ASEAN region" as well as to "create a favorable environment where ASEAN member states (AMSs) can integrate, operate and cooperate in various aspects related to food production, processing and trade."³³ The ASEAN Ministers on Agriculture and Forestry (AMAF) is responsible for implementation of the framework. The framework has specific strategies that are relevant to the agriculture and food industry's integration into GVCs and SMEs: Strategic Thrust 2 aims to "promote conducive food market and trade" and Strategic Thrust 5 aims to "encourage greater investment in food and agri-based industry to enhance food security." Strategic Thrust 5 specifically calls for helping SMEs acquire information about investment opportunities.

To ensure food security through international trade, ASEAN is a party to the ASEAN Plus Three Emergency Rice Reserve (APTERR). In APTERR, ASEAN and China, Japan and South Korea agreed to "limit export restrictions on rice by contributing to virtual stockpiles, creating an

²⁸ *Technical Barriers to Trade*. (2003). United Nations/World Trade Organisation.

²⁹ http://asean.org/storage/2012/10/ASEAN-Food-Policy-030516_2.pdf

³⁰ <http://www.fao.org/fao-who-codexalimentarius/about-codex/en/>

³¹ <https://www.oecd.org/cfe/smes/31919278.pdf>

³² <https://www.oecd.org/cfe/smes/31919278.pdf>

³³ *ASEAN Integrated Food Security (AIFS) Framework and Strategic Plan of Action on Food Security in the ASEAN Region (SPA-FS) 2015-2020*. ASEAN.

information sharing and market price mechanism for an origin neutral trade in rice when a member is predicted to be in need of supply.”³⁴ This is an example of trade liberalization to ensure that countries have access to the region’s staple crop in times of need. Moreover, APTERR could serve as a guiding example for broader trade liberalization.

Every ASEAN country—except Thailand, Cambodia and Myanmar—has agriculture self-sufficiency targets.³⁵ Even Singapore, which has a tiny agriculture sector, aims to achieve certain levels of self-sufficiency. For the most part, self-sufficiency policies center on rice production, the staple crop in ASEAN. These policies look to protect states from fluctuations in the international food market but could serve as blocks to more integrated trade.

Recommendations

- 1) **Diversify agriculture production to meet changing market demands** – ASEAN countries should add new or expand production of underdeveloped crops and products to match the changing lifestyles of its citizens. Each member state has an expanding middle class and most are experiencing rapid urbanization. As citizens’ disposable income increases, demand rises for healthy and convenient foods as well as meats. Furthermore, rice consumption decreases, relative to other foods, as people acquire more wealth. Clustering could expedite agricultural diversification and contribute to stronger intra-ASEAN linkages, particularly for these emerging foods.
- 2) **Emphasize niche markets** – While food production tends to be controlled by large retailers, SMEs are uniquely positioned to serve niche food demands because they can more easily customize their production. Halal and organic foods are two specializations to consider for ASEAN clusters.
- 3) **Invest in infrastructure and agriculture research and development** – Inadequate agriculture irrigation and transportation are cited as key constraints in competitiveness and cluster formation in several countries. In addition, small-plot farmers and food sector SMEs tend to use outdated technology that reduces yields and competitiveness. Improving infrastructure and upgrading technology could help farmers and SMEs better link with GVCs.

³⁴ Chow, M. E., & Slade, M. V. (2016). *Food Security and Trade: Can ASEAN Show the WTO a Way Forward?* (Issue brief). National University of Singapore.

³⁵ *OECD-FAO Agricultural Outlook 2017-2026: Southeast Asia: Prospects and challenges* (Rep.). (2017). OECD/FAO.

2.5 ASEAN MEMBER STATES

Brunei

Brunei has a population of just over 400,000, making it by far the smallest ASEAN country. Its economy depends heavily on oil and gas, which accounts for 65 percent of GDP and 95 percent of exports.³⁶ As such, agriculture plays a small role in its economy. In fact, agriculture contributes to less than 1 percent of Brunei's GDP. Thus, Brunei imports approximately 80 percent of its food. Livestock is Brunei's most valuable domestic sector, generating US\$193.4 million in 2016.³⁷ The value of crops and agri-food processing were US\$51.6 million and US\$108.3 million, respectively, that same year.

The government emphasizes achieving agricultural self-sufficiency, particularly with rice, to limit the risk that stems from volatile international food markets. To date, Brunei has achieved self-sufficiency for poultry, eggs and tropical leafy vegetables.

Table 4: Overview of Brunei market

Category	Data
Population (million)*	0.43
Rural Population (% of total)*	22.8%
GDP (PPP) (USD)*	\$33.2 billion
GDP (PPP) per capita (USD)*	\$79,700
GDP from Agriculture*	0.9%
Labor Force in Agriculture*	4.2%
Agricultural Land Use*	2.5%
Arable Land*	0.8%
Net Agriculture Trade Value [^]	-\$478 million
Value of Agricultural Production [^]	\$49.4 million

Sources: *CIA World Factbook 2017; [^]Food and Agriculture Organization of the United Nations (2015)

Table 5: Export value by type of crop (Brunei)

Crop	Year	Measure	Unit	Value	Global Share	Share in SE Asia
Food prep nes	2016	Export Value	1,000 US\$	675	0.00%	0.00%

Source: FAOSTAT

³⁶ CIA World Factbook 2017

³⁷ <http://www.agriculture.gov.bn/SiteCollectionDocuments/Statistik/Agriculture%20and%20AgriFood%20Statistics%20016.pdf>

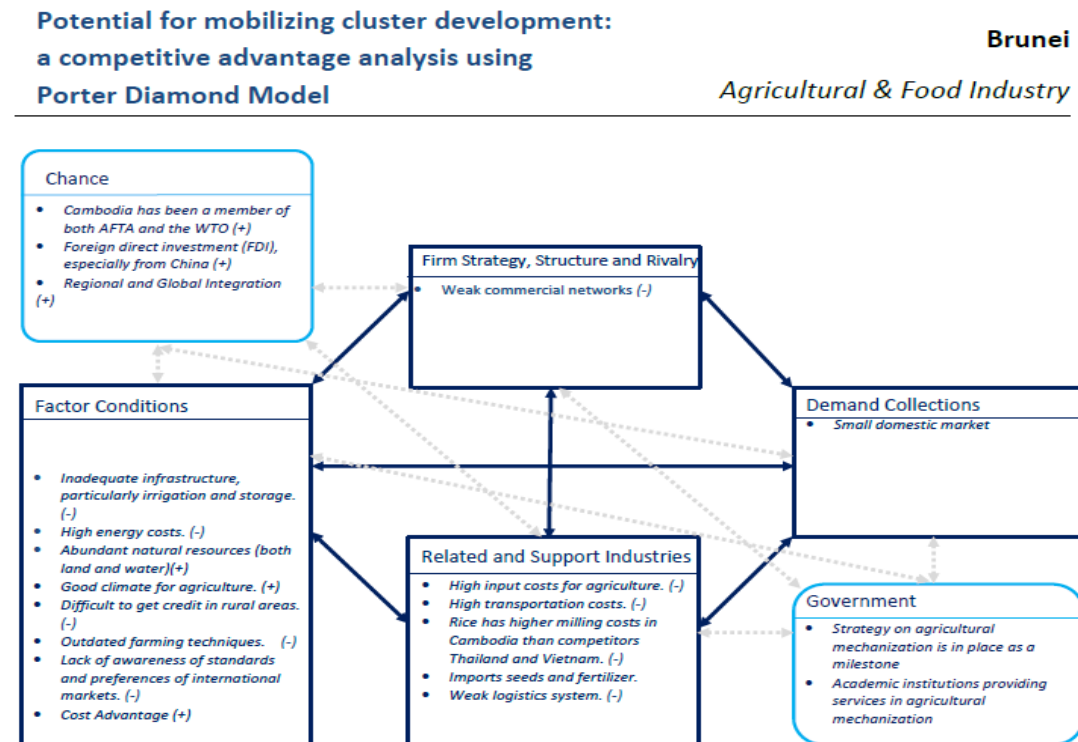
SMEs in Food and Agriculture

Of Brunei's 9,150 registered SMEs, 976 (10.6%) were in the agriculture, forestry and fishing sectors as of 2008.³⁸ Broiler chicken production and processing, which generates about US\$102 million, is Brunei's most successful sub-sector in agriculture. SMEs account for a 25.7 percent market share.³⁹ In addition, SMEs account for 12.2 percent of Brunei's US\$26 million egg industry.

Cluster Mobilization

Brunei will face difficulty in developing robust agriculture and food clusters due in large part to its small domestic market. Furthermore, it has weak agriculture-related infrastructure and human resources. Oil and gas dominates the economy of Brunei. Developing a cluster for halal food products is a niche sub-sector that offers the highest potential for Brunei to connect with global value chains. Brunei already has an internationally recognized halal brand and certification system, as well as a significant domestic market for halal products, which can be leveraged to expand its global competitiveness.

Figure 19: Potential for Mobilizing Cluster Development (Brunei)



³⁸<http://www.asean.org/storage/images/documents/SME%20Policies%20in%204%20ASEAN%20Countries%20-%20Brunei%20Darussalam.pdf>

³⁹<http://www.agriculture.gov.bn/SiteCollectionDocuments/Statistik/Agriculture%20and%20AgriFood%20Statistics%202016.pdf>

Government Policy

The government of Brunei aims to achieve self-sufficiency in agriculture production.⁴⁰ More specifically, it would like to be 20 percent self-sufficient for rice by 2020. However, Brunei was only 4.56 percent self-sufficient as of 2016.⁴¹ To increase rice output, the Department of Agriculture and Agrifood provides training to farmers on agriculture practices and promotes the use of high yield hybrid varieties of rice.⁴² In addition, Indonesia provides technical support to help Brunei improve land quality and irrigation infrastructure.⁴³

All food producers, importers and manufacturers must comply with the standards set forth by the government in the “Public Health (Food) Act (Chapter 182) and its Regulations (R1, Chapter 182).” The standards cover labeling requirements and aim to ensure that “safety and appropriateness of the ingredients and that the food is not contaminated with any substances that are harmful to health,” according to the Brunei Ministry of Public Health.⁴⁴ The Codex standards apply to all foods that are not specified in the Public Health Act.

It is important to note that the government aims to diversify its economy to reduce its heavy reliance on oil and gas.⁴⁵ Agriculture and food is a sector that could benefit from this push.

Recommendations

- 1) **Form halal food cluster** – Forming a halal cluster could lead to a niche export industry for Brunei. There are approximately 1.6 billion Muslims in the world, and Islam is expected to continue growing. This means that there is a substantial and expanding market for halal foods. Currently, the halal food industry is worth US\$650 million. Because Brunei is a predominately Muslim country, there is an existing small, niche market for halal products. In Brunei, all foods must be halal certified. Moreover, ‘Brunei Halal’ is already a respected certification brand.⁴⁶

To create an effective halal industry, Brunei must establish a halal-specific manufacturing system and improve infrastructure and transportation to connect with international markets. Furthermore, the country will need to promote its brand in international markets. The country could also consider linkages with Malaysia and Indonesia.

- 2) **Improve agriculture-specific human resources** – Develop a strategy to encourage younger workers to pursue careers in agriculture. Similar to the Dare to Return initiative in Thailand, farming can be made attractive to some young professionals with the applications of modern technologies and social media promotion. Brunei can introduce similar initiatives to attract interest in modern agriculture and provide training in modern agricultural practices and technologies as well as marketing support to make farming attractive to more people and support Brunei’s self-sufficiency target.

⁴⁰ <http://www.fao.org/3/a-av022e.pdf>

⁴¹ <https://thescoop.co/2018/03/06/new-rice-strain-paddy-farmers/>

⁴² <https://borneobulletin.com.bn/brunei-taking-hybrid-way-to-rice-self-sufficiency-minister/>

⁴³ <https://borneobulletin.com.bn/indonesia-supports-bruneis-rice-self-sufficiency-bid/>

⁴⁴ <http://www.moh.gov.bn/SitePages/Standard%20and%20Information.aspx>

⁴⁵ <http://www.asean.org/storage/images/documents/SME%20Policies%20in%204%20ASEAN%20Countries%20-%20Brunei%20Darussalam.pdf>

⁴⁶ <https://www.grdspublishing.org/index.php/people/article/viewFile/1040/905>

Cambodia

Agriculture and food are critical sectors in Cambodia's economy. Cambodian agriculture output has improved tremendously since the early 2000s. From 2004-12, the sector grew by 5.3 percent and yields by 4 percent.⁴⁷ The sector contributes about 30 percent to GDP and employs nearly half of the country's workforce.

Although Cambodia is a net food importer, according to FAO data, the country is integrated into some global agricultural value chains, notably rice and rubber. In 2015, the rice sector generated US\$285 million in export value, capturing 1.3 percent of the global market. Cambodia's rice sector has close value chain linkages with other ASEAN countries. Much of the rice produced in Cambodia is exported (sometimes informally) to Thailand and Vietnam, where the rice is then milled and distributed in domestic markets or exported.⁴⁸

Cambodia is involved in mostly low-value agriculture. For more impactful development, the country needs to start exporting processed agricultural products. A World Bank report found that "almost all crops were exported to neighboring countries unprocessed. This indicates serious weakness in the value chain, particularly in the post-harvest system of supply chain management (collection of raw material, storage, finance, logistics, transportation, and information)."⁴⁹

Table 6: Overview of Cambodia Market

Category	Data
Population (million)*	15.71
Rural Population (% of total)*	79.3
GDP (PPP) (USD)*	\$54.21 billion
GDP (PPP) per capita (USD)*	\$3,500
GDP from Agriculture*	28.6%
Labor Force in Agriculture*	48.7%
Agricultural Land Use*	32.1%
Arable Land*	22.7%
Net Agriculture Trade Value^	-\$400 million
Value of Agricultural Production^	\$4.4 billion

Sources: *CIA World Factbook 2017; ^Food and Agriculture Organization of the United Nations (2015)

⁴⁷ <http://www.worldbank.org/en/news/feature/2015/08/19/cambodian-agriculture-in-transition-opportunities-and-risks>

⁴⁸ <https://www.ifc.org/wps/wcm/connect/ed10f08049a04cfd8bbcabe54d141794/Cambodia+Market+Survey-Final-2015.pdf?MOD=AJPERES>

⁴⁹ <http://documents.worldbank.org/curated/en/805091467993504209/pdf/96308-ESW-KH-White-cover-P145838-PUBLIC-Cambodian-Agriculture-in-Transition.pdf>

Table 7: Export Value by type of crop (Cambodia)

Crop	Year	Measure	Unit	Value	Global Share	Share in SE Asia
Rice	2015	Export Value	1,000 US\$	284,905	1.3%	3.6%
Natural Rubber	2016	Export Value	1,000 US\$	163,328	1.4%	1.6%
Dried Cassava	2016	Export Value	1,000 US\$	22,211	1.1%	1.1%
Starch Cassava	2015	Export Value	1,000 US\$	18,040	1.2%	1.2%

Source: FAOSTAT

SMEs in Food and Agriculture

As in most of ASEAN, SMEs in Cambodia play an important role in the economy as they constitute 99 percent of all businesses and provide 45 percent of jobs⁵⁰ Agriculture is the most prevalent sector for SMEs in Cambodia, and approximately 84 percent of registered SMEs are classified in the food, beverage and tobacco sectors.⁵¹ Still, agribusiness is an underdeveloped sector in Cambodia, accounting for 9.2 percent of GDP.⁵² According to the World Bank, most of these agribusinesses are “small traders and informal agro-enterprises.”⁵³ SMEs in Cambodia, overall, have low productivity and are not competitive internationally for several reasons, such as limited access to finance and market information, high costs, and the lack of human resources.

Cluster Mobilization

There is potential to develop clusters as a means to add value to Cambodia’s rice industry. The country would benefit from improving its milling capacity rather than exporting rice paddy to Thailand and Vietnam to be milled.⁵⁴ As such, developing clusters among midstream agribusinesses, such as rice milling, could enhance competitiveness in an important segment of the value chain in which the country currently has low capacity.

⁵⁰<https://www.ifc.org/wps/wcm/connect/70858880474dce1595069f11d57e6c63/Cam+SME-Financial+Services+and+Products.pdf?MOD=AJPERES>

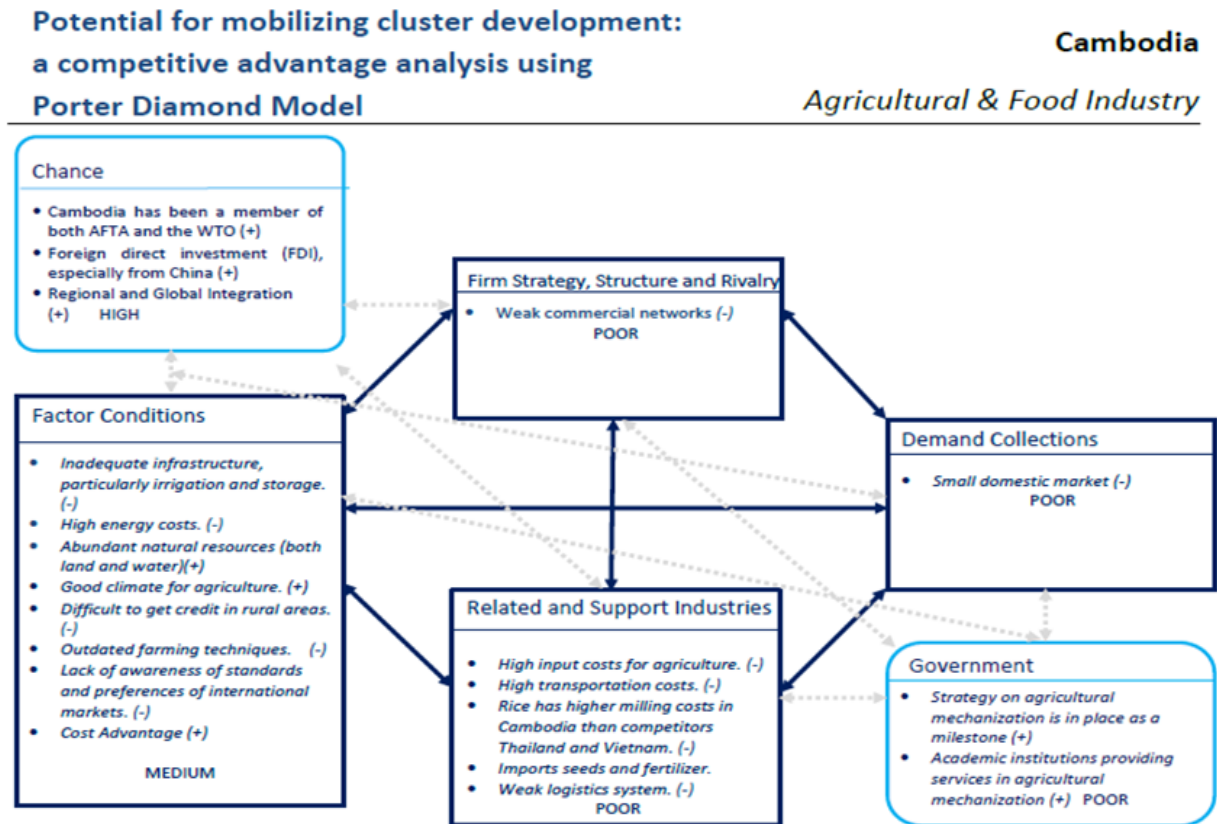
⁵¹<http://www.asean.org/storage/images/archive/documents/SME%20Development%20Policies%20in%204%20ASEAN%20Countries%20-%20Cambodia.pdf>

⁵² <http://documents.worldbank.org/curated/en/805091467993504209/pdf/96308-ESW-KH-White-cover-P145838-PUBLIC-Cambodian-Agriculture-in-Transition.pdf>

⁵³ <http://documents.worldbank.org/curated/en/805091467993504209/pdf/96308-ESW-KH-White-cover-P145838-PUBLIC-Cambodian-Agriculture-in-Transition.pdf>

⁵⁴ <https://www.oecd.org/aidfortrade/48413491.pdf>

Figure 20: Potential for mobilizing cluster development (Cambodia)



Government Policy

In 2013, the government of Cambodia issued phase three of its Rectangular Strategy for Growth, Employment, Equity and Efficiency. The strategy aims to guide Cambodia to become an upper-middle income country by 2030. Improving the competitiveness of SMEs is a core pillar of the strategy. In the strategy, the government indicates that it will upgrade SME capacity by forming clusters in industrial zones that link SMEs with large enterprises. Also relevant to connecting agricultural SMEs to global value chains, the strategy calls for improving transportation as a means to enhance the economic linkages between Cambodia and neighboring countries. Finally, the strategy emphasizes promoting the commercialization of agriculture in order to increase the sector's value-add.⁵⁵

Cambodia has yet to establish food regulations, but generally follows Codex standards.⁵⁶ Laws related to food safety, registrations, and standards remain in progress.

⁵⁵ http://www.ilo.org/asia/info/WCMS_237910/lang--en/index.htm

⁵⁶ Thanh, V. (2015). Global Agricultural Information Network (GAIN) Report - Cambodia (Issue brief) (G. Smith, Approved). USDA.

Recommendations

- 1) **Promote brands of Cambodian rice in international markets** – The International Finance Corporation (IFC), part of the World Bank, recommends that the Cambodian government and private sector should do more to promote high-value (fragrant and organic) rice in luxury markets, such as the United States, Europe and Singapore.⁵⁷ The rice market is highly competitive with Thailand (the world's no. 2 exporter in 2017 at US\$5.2 billion, or 24.9% of world rice exports) and Vietnam (world's no. 5 exporter at US\$ 1.6 billion, or 7.5%) being the dominant producers in ASEAN while Cambodia follows at a distance (the world's no. 9 exporter at US\$333.1 million, or 1.6%).⁵⁸ Having significantly less land area to grow rice, Cambodia cannot compete with its larger neighbors on export quantity, and focusing on promoting high-value rice, especially branded rice, offers an attractive strategy for the country.
- 2) **Invest in technology and infrastructure** – Cambodia's agriculture potential is limited by low value-add capabilities. More investment should be made in technology to improve the post-harvest processing and infrastructure, notably irrigation systems,⁵⁹ as well as in branding high-value rice and rice products.
- 3) **Diversify agriculture base** – Cambodia places a heavy emphasis on rice cultivation; however, it would be prudent to continue diversifying its crops, a process that is already underway. Although rice is Cambodia's leading agricultural export, it is not the country's most profitable crop.

Indonesia

Agriculture and food are a central part of ASEAN's largest country and economy. The sector contributes nearly 14 percent to Indonesia's GDP and employs almost 40 percent of the labor force. Indonesia's agriculture and food sector is integrated into global value chains, as is evident from the country's export capacity for a range of agricultural products. Indonesia is among the world's leading exporters for vegetable oil, palm oil, rubber and coconut oil. However, the country remains a net importer of grains, horticulture and livestock produce.⁶⁰

Indonesia is the top producer of rice, the staple crop of the region, harvesting more than 75 million metric tons in 2015. Despite its prodigious output, Indonesia does not produce enough rice to meet domestic demand. In fact, Indonesia is among the world's biggest rice importers.

⁵⁷<https://www.ifc.org/wps/wcm/connect/ed10f08049a04cfd8bbcabe54d141794/Cambodia+Market+Survey-Final-2015.pdf?MOD=AJPERES>

⁵⁸ <http://www.worldstopexports.com/rice-exports-country/>.

⁵⁹ <http://www.fao.org/3/a-i3761e.pdf>

⁶⁰ <http://www.fao.org/3/a-i7696e.pdf>

Table 8: Overview of Indonesia market

Category	Data
Population (million)*	256
Rural Population (% of total)*	46.3
GDP (PPP) (USD)*	\$2.842 trillion
GDP (PPP) per capita (USD)*	\$11,100
GDP from Agriculture*	13.6%
Labor Force in Agriculture*	38.9%
Agricultural Land Use*	31.2%
Arable Land*	13%
Net Agriculture Trade Value [^]	\$17.6 billion
Value of Agricultural Production [^]	\$68 billion

Sources: *CIA World Factbook 2017; [^]Food and Agriculture Organization of the United Nations (2015)

Table 9: Export Value by type of crop (Indonesia)

Crop	Year	Measure	Unit	Value	Global Share	Share in SE Asia
Animal Vegetable Oil	2016	Export Value	1,000 US\$	19,295,092	23.1%	56.0%
Palm Oil	2015	Export Value	1,000 US\$	17,464,905	51.0%	59.0%
Fixed Vegetable Oils	2016	Export Value	1,000 US\$	17,094,809	24.3%	58.8%
Natural Rubber	2016	Export Value	1,000 US\$	3,372,319	28.5%	33.5%
Coffee	2015	Export Value	1,000 US\$	1,189,725	5.9%	33.6%
Oil, coconut (copra)	2016	Export Value	1,000 US\$	816,155	27.9%	37.5%
Canned Pineapples	2015	Export Value	1,000 US\$	192,248	14.2%	17.1%

Source: FAOSTAT

SMEs in Agriculture and Food

Small and medium-sized enterprises account for over 99 percent of all businesses in Indonesia.⁶¹ Over 50 percent of all businesses in Indonesia are categorized as SMEs in the agriculture sector.⁶² Within the agriculture sector itself, all but 242 of the 26,401,111 enterprises were classified as SMEs. Small farms represent the vast majority (93%) of total farms in Indonesia. These farms have an average size of 0.6 hectares and usually have only five to six workers (often family members).⁶³ Indonesia's small farms use outdated tools and poor seeds, which limits their productivity. As such, small farms only provide 49 percent of farmers' annual income.⁶⁴

⁶¹ http://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-jakarta/documents/presentation/wcms_564690.pdf

⁶² https://www.rieti.go.jp/en/events/10100101/pdf/5-5_tambunan_paper_en.pdf

⁶³ <http://www.fao.org/3/i8881en/i8881EN.pdf>

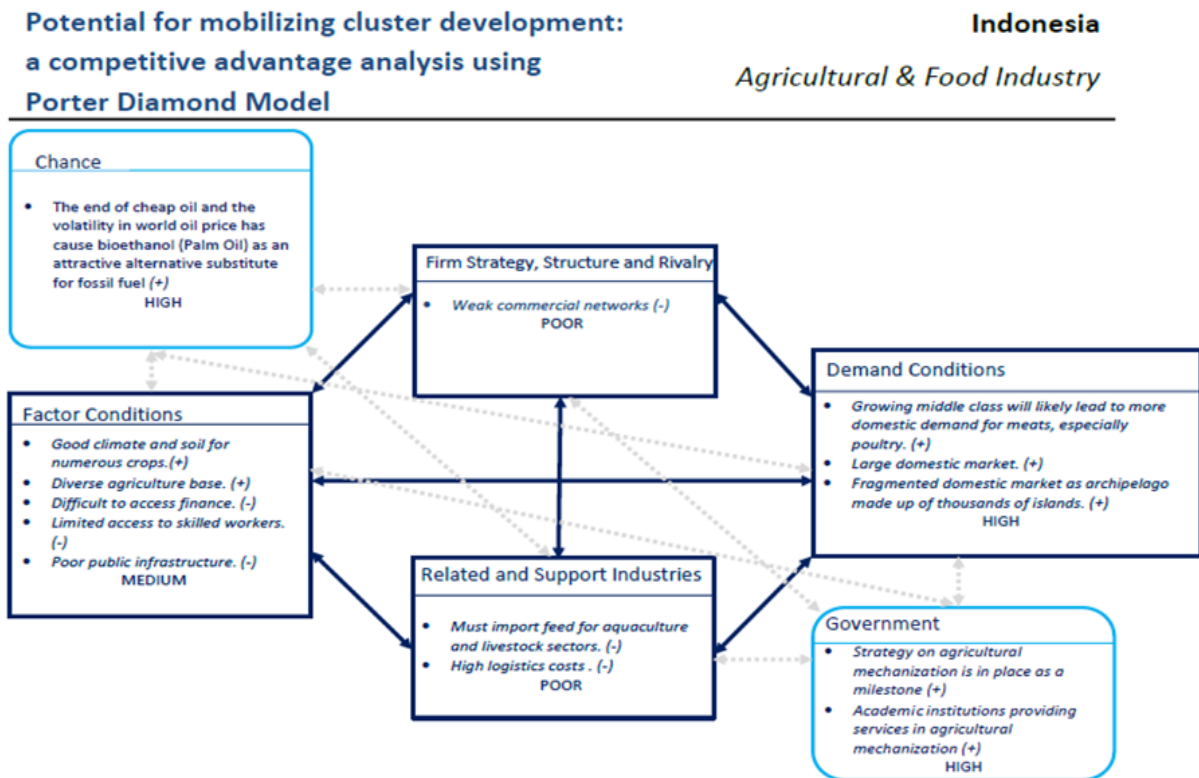
⁶⁴ <http://www.fao.org/3/i8881en/i8881EN.pdf>

Indonesian SMEs tend to have low productivity due to the use of outdated technologies and labor-intensive work. As a result, SMEs contributed only 57 percent to the Indonesia's value-add.⁶⁵ This contributes to their struggle to export products and connect with global value chains. Micro and small businesses export only 0.5 percent of their goods. Within the food-processing sector, just 0.2 percent export and the vast majority sell all their goods locally⁶⁶. Indonesia's food-processing sector as a whole is not well integrated into regional and global value chains.

Cluster Mobilization

As part of its 2008 National Industrial Policy, the Indonesian government established 35 priority industrial clusters, 12 of which are related to agriculture.⁶⁷ Coordination among different government ministries, however, negatively affected the majority of these clusters. Furthermore, although there are already established industrial clusters in Indonesia, they have limited effectiveness on SMEs due to weak linkages and low productivity.⁶⁸ Constraints include large firms dominating export-oriented sub-sectors, like palm oil, and the scattered nature of SMEs in Indonesia.

Figure 21: Potential for mobilizing cluster development (Indonesia)



⁶⁵ https://www.rand.org/pubs/research_reports/RR1096.html

⁶⁶ https://www.rand.org/pubs/research_reports/RR1096.html

⁶⁷ <https://www.adb.org/sites/default/files/publication/110982/ewp-411.pdf>

⁶⁸ <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.503.5272&rep=rep1&type=pdf>

Government Policy

The government has generally used a protectionist policy that has hurt the country's export potential and integration into global value chains⁶⁹. For example, the country has requirements for a "higher percentage of local content in exports."⁷⁰ In addition, Indonesia, like Brunei, aims to become self-sufficient in rice production. The government supports rice farmers by subsidizing fertilizer and buying rice at artificially higher values than the international market.⁷¹

The government offers credit schemes and support services for SMEs. The government launched the Kredit Usaha Rakyat (KUR), a microfinance program, in 2007 to provide credit specifically to SMEs. In addition, the government has established several Pusat Layanan Usaha Terpadu (PLUT KUMKM), which are support centers for SMEs.⁷² These centers provide consulting services, mentoring, training and networking support to SMEs. As of 2016, there were 42 centers in 16 provinces.

The government of Indonesia ratified a new, comprehensive food law (Law 18/2012) in 2012.⁷³ The law issues standards that cover food production, manufacturing and importation. The law's regulations include standards for nutrition, food additives, pesticides and contaminants, packaging, product registration, intellectual property, among others. For importers, the new law can seem byzantine because, in many instances, importers must register with the National Agency for Drug and Food Control (BPOM) as well as attain an import recommendation from the Ministry of Agriculture and an import permit from the Ministry of Trade.

Recommendations

- 1) **Increase linkages to international markets** – More trade could lead to technical transfer to local businesses and thereby greater productivity in Indonesia. Moreover, reducing protectionist measures will lower prices for goods for consumers and inputs for producers.⁷⁴ As can be seen in the automotive sector, FDI can be a viable approach for SMEs to link to global value chains and international markets as MNCs can bring market access and technical transfer in addition to their massive investing power.
- 2) **Improve access to finance for SMEs** – The government of Indonesia has made efforts to improve SME access to finance and credit; however, limited financial access is frequently cited as an inhibitor of SME growth in Indonesia. Ongoing efforts by the government apparently have limited success pointing to the need to put more effort and increase financing channels in order to reach more SMEs in need of finance and credit.

⁶⁹ <http://australiaindonesiacentre.org/projects/food-processing-and-value-chain-development-in-indonesia/>

⁷⁰ <https://www.straitstimes.com/asia/se-asia/growing-protectionism-hurting-indonesia-study>

⁷¹ <http://www.fao.org/3/a-i7696e.pdf>

⁷² <https://www.ifc.org/wps/wcm/connect/b3b5756e-708a-49fc-afe3-df26cff517f1/SME+Indonesia+Final.pdf?MOD=AJPERES>

⁷³ Abdi, A. (Approver). (2014). *Global Agricultural Information Network (GAIN) Report - Indonesia* (Issue brief). USDA.

⁷⁴ <https://www.oecd.org/indonesia/Chap%204%20-%20market%20openness.pdf>

Lao PDR

Although its share of employment is declining, agriculture remains the livelihood source for the majority (73.1%) of people in Lao PDR; however, most are involved in low-productivity, subsistent farming. In fact, only 30 percent of farming households produce most of their output for commercial purposes.⁷⁵ Moreover, agriculture growth over the past two decades has been credited for increasing the amount of cultivated land rather, than productivity gains. The sector experienced an annualized growth rate of only 3.4 percent from 2000-2014, which is slower than its neighbors Vietnam and Cambodia.⁷⁶ In addition, the agricultural labor force has the lowest productivity by a wide margin of any of Lao PDR's major industries.⁷⁷

Lao PDR has a young and underdeveloped food-processing sector. Less than 1 percent of all agricultural workers work in food-related factories, according to the Japan International Cooperation Agency (JICA).⁷⁸ Outside of rice milling, drinking water and sugar production are the most prevalent food-processing sub-sectors in terms of labor.

Lao PDR has an inefficient value chain replete with problems with inputs, farming technology and post-harvest capacity. Inadequate infrastructure, notably irrigation systems, further compounds problems. In addition, the system to monitor product standards contributes to Lao PDR's inability to become well integrated into global value chains.

As a consequence of the inefficient value chain, Lao PDR had a total export value of only US\$2.7 billion in 2015, which puts them ahead of only Brunei and Singapore among ASEAN nations. Lao PDR is a net importer of agricultural products.

Table 10: Overview of Lao PDR Market

Category	Data
Population (million)*	6.9
Rural Population (% of total)*	61.4%
GDP (PPP) (USD)*	\$37.32 billion
GDP (PPP) per capita (USD)*	\$5,300
GDP from Agriculture*	23.1%
Labor Force in Agriculture*	73.1%
Agricultural Land Use*	10.6%
Arable Land*	6.2%
Net Agriculture Trade Value [^]	-\$564 million
Value of Agricultural Production [^]	\$2.7 billion

Sources: *CIA World Factbook 2017; [^]Food and Agriculture Organization of the United Nations (2015)

⁷⁵ *International Development Association Project Appraisal Document - Lao People's Democratic Republic for an Agriculture Competitiveness Project* (Rep.). (2018). The World Bank.

⁷⁶ *International Development Association Project Appraisal Document - Lao People's Democratic Republic for an Agriculture Competitiveness Project* (Rep.). (2018). The World Bank.

⁷⁷ <http://www.eria.org/RPR-FY2015-2.pdf>

⁷⁸ <http://www.eria.org/RPR-FY2015-2.pdf>

Table 11: Export Value by type of crop (Lao PDR)

Crop	Year	Measure	Unit	Value	Global Share	Share in SE Asia
Fruit and Vegetables	2016	Export Value	1,000 US\$	106,068	0.0%	0.8%
Natural Rubber (dry)	2015	Export Value	1,000 US\$	63,135	0.6%	0.6%
Coffee	2015	Export Value	1,000 US\$	56,089	0.3%	1.6%
Maize	2015	Export Value	1,000 US\$	53,191	0.18%	24.6%
Dried Cassava	2015	Export Value	1,000 US\$	28,506	1.4%	1.5%
Rice	2015	Export Value	1,000 US\$	26,800	0.1%	0.3%

Source: FAOSTAT

SMEs in Food and Agriculture

SMEs account for 99.8 percent of all registered businesses in Lao PDR.⁷⁹ This figure does not account for the large number of informal businesses that would be classified as small enterprises as well. SMEs employ 81 percent of the labor force. On aggregate, SMEs in Lao PDR are unproductive, contributing to just 16 percent of GDP.⁸⁰ The inability to access capital and skilled labor are considered key constraints on SMEs.

SMEs dominate Lao PDR's food processing sector, accounting for 99 percent of the sector.⁸¹ Of the sector's 9,942 factories, 9,026 (91%) performed rice milling, according to Ministry of Industry and Commerce (2010) data. Overall, the statistics suggest that few large, competitive businesses are developed in the country.

Cluster Mobilization

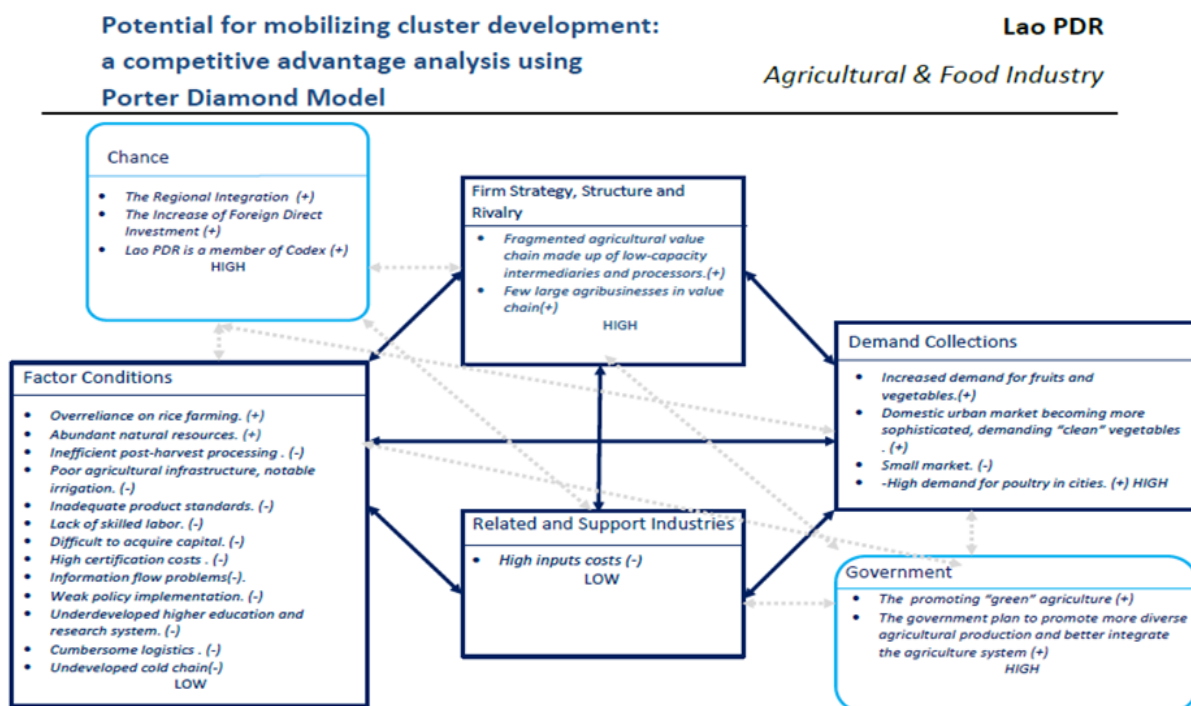
Lao PDR faces a number of challenges in upgrading its agriculture and food processing sectors. The country suffers from weak infrastructure, including roads and irrigation, lacks a large skilled labor force and depends on outmoded technology for food processing. Nonetheless, clusters could be beneficial for linking the numerous small, family farms that make up the production base and connecting them with the small agribusinesses.

⁷⁹ *Country Analysis Report: Lao PDR* (Rep.). (2015). UNDP.

⁸⁰ *Country Analysis Report: Lao PDR* (Rep.). (2015). UNDP.

⁸¹ http://open_jicareport.jica.go.jp/pdf/12066924_01.pdf

Figure 22: Potential for mobilizing cluster development (Lao PDR)



Government Policy

In the 8th National Socio-Economic Development Plan (NSED) for 2016–2020, the government of Lao PDR articulated its objective of promoting “green” agriculture that is characterized by using sustainable, non-toxic practices. The government also indicated its plan to promote more diverse agricultural production and better integrate the agriculture system.⁸² The Ministry of Agriculture and Forestry (MAF) underscored the goals articulated in the NSED in the “Agriculture Development Strategy to 2025 and Vision to the year 2030.” In the latter document, MAF prioritized developing organic agriculture. Furthermore, the MAF stated that it will improve its agricultural standards so that they will be recognized by foreign markets. Currently, the MAF has standards for “good agricultural practices (GAP)” and “organic agriculture”; however, these standards are optional for farmers.⁸³

In the “Agriculture Development Strategy to 2025 and Vision to the year 2030,” the MAF indicated that it views cattle, fish, sugarcane, cassava, coffee and vegetables as sub-sectors that it can expand for commercialization and exporting. To achieve its goals, the MAF will pursue modernization and industrialization of the agribusiness sector and support a more integrated value chain that better connects urban and rural areas.⁸⁴ In the area of cluster development and linkages, the MAF will help to establish cooperative groups and industrial estates that strengthen the “value

⁸² *The Agro-ecology Initiatives in Lao PDR* (Rep.). (2018). Cooperation International for Research on Agriculture and Development.

⁸³ *Agriculture Development Strategy to the year 2025 and Vision to the year 2030* (Publication). (2015). Lao People's Democratic Republic.

⁸⁴ *Agriculture Development Strategy to the year 2025 and Vision to the year 2030* (Publication). (2015). Lao People's Democratic Republic.

added chain in connection with agriculture strategic goods such as rice, maize, coffee, sugarcanes, cassava, rubber, beef, vegetables and other crops.”⁸⁵

Lao PDR is a member of Codex, and the national food law aims to ensure that all regulations and standards related to food safety comply with Codex. In addition, the National Food Safety Policy covers the entire food chain, including security, production, processing, distribution, and emergency response.⁸⁶

Recommendations

- 1) **Diversify commercial agriculture crops** – 72 percent of cultivated land in Lao PDR is used for rice, and so the country has to import other crops (fruits, vegetables and meats) from Thailand, China and Vietnam to meet growing domestic demand for more diverse food.⁸⁷ There is potential for Lao PDR to increase its maize production to meet the rising demand for animal feed on livestock farms in Thailand and Vietnam. In addition, Lao PDR is capable of producing more high-quality coffee to export to valuable markets, such as Europe.⁸⁸
- 2) **Focus on high-value, organic crops** – Lao PDR has not overused chemicals and synthetic fertilizers like other countries in the region, and so Lao PDR has an opportunity to apply GAP to produce high-value, niche products on its numerous small-holder farms.⁸⁹ Specifically, the country has potential to produce organic crops due to low pesticide residue and diverse microclimates.⁹⁰ The government should promote and ensure high-quality standards to help farmers and agribusinesses produce products that meet the requirements of major international markets.
- 3) **Modernize agribusiness** – Most food processors in Lao PDR have low capacity, which leads to excessive losses during the post-harvest stage. These processors tend to use outdated technology. In addition to using investment incentives to promote more investment by local investors in modern agribusiness, the government should also consider measures to attract FDI in the sector in order to gain technology and market access from these foreign investments.
- 4) **Improve organic certification process** – Lao PDR’s current certification process is expensive and time consuming. Few farmers can afford to apply. There are currently only 12 companies and production groups that are certified.⁹¹ The government should streamline the process and make it more affordable to encourage more farmers and agribusinesses to get their products organically certified. Reforming the certification process is a prerequisite for forming an organic cluster.

⁸⁵ *Agriculture Development Strategy to the year 2025 and Vision to the year 2030* (Publication). (2015). Lao People’s Democratic Republic.

⁸⁶ National Food Safety Policy. (2009). Ministry of Health of the Lao People’s Democratic Republic.

⁸⁷ *International Development Association Project Appraisal Document - Lao People’s Democratic Republic for an Agriculture Competitiveness Project* (Rep.). (2018). The World Bank.

⁸⁸ *International Development Association Project Appraisal Document - Lao People’s Democratic Republic for an Agriculture Competitiveness Project* (Rep.). (2018). The World Bank.

⁸⁹ *International Development Association Project Appraisal Document - Lao People’s Democratic Republic for an Agriculture Competitiveness Project* (Rep.). (2018). The World Bank.

⁹⁰ *The Agro-ecology Initiatives in Lao PDR* (Rep.). (2018). Cooperation International for Research on Agriculture and Development.

⁹¹ *The Agro-ecology Initiatives in Lao PDR* (Rep.). (2018). Cooperation International for Research on Agriculture and Development.

Malaysia

Agriculture plays a less important role in Malaysia's economy than most of its ASEAN neighbors. The sector employs about 11 percent of the workforce and contributes to only 8.9 percent of GDP, which is more than only Brunei and Singapore. The agricultural sector's contribution to GDP has declined significantly since 1970 when it stood at approximately 30 percent.⁹² Malaysia, however, is a leading global producer and export of palm oil. In 2015, Malaysia exported almost US\$12 billion in palm oil, a 35 percent global share that was second to only Indonesia. Industrial crops, such as palm oil, rubber and cocoa, comprise much of the agricultural landscape, accounting for 86 percent of all agricultural land use.⁹³

The sector makes up a declining share of Malaysia's employment and economic growth. From 2011-15, the agriculture sector experienced a growth rate of only 2.4 percent, by far the lowest rate of any major sector.⁹⁴ Moreover, agricultural exports had negative growth rate (-2.8) during the 2010-15 period.

Agricultural productivity is low at just 60 percent that of the manufacturing sector in Malaysia.⁹⁵ Furthermore, farmers are an aging demographic with over 55 percent of all farmers being 55 years or older. As such, the country relies heavily on foreign labor.

Table 12: Overview of Malaysia market

Category	Data
Population (million)*	30.5
Rural Population (% of total)*	25.3
GDP (PPP) (USD)*	\$815.6 billion
GDP (PPP) per capita (USD)*	\$26,300
GDP from Agriculture*	8.9%
Labor Force in Agriculture*	11%
Agricultural Land Use*	23.2%
Arable Land*	2.9%
Net Agriculture Trade Value [^]	\$6.2 billion
Value of Agricultural Production [^]	\$15.3 billion

Sources: *CIA World Factbook 2017; [^]Food and Agriculture Organization of the United Nations (2015)

⁹² http://ap.fttc.agnet.org/ap_db.php?id=386&print=1

⁹³ http://ap.fttc.agnet.org/ap_db.php?id=853&print=1

⁹⁴ <http://www.epu.gov.my/sites/default/files/Chapter%208.pdf>

⁹⁵ http://ap.fttc.agnet.org/ap_db.php?id=853&print=1

Table 13: Export Value by type of crop (Malaysia)

Crop	Year	Measure	Unit	Value	Global Share	Share in SE Asia
Palm Oil	2015	Export Value	1,000 US\$	11,994,813	35.0%	40.3%
Natural Rubber	2016	Export Value	1,000 US\$	871,121	7.4%	8.7%
Pastry	2016	Export Value	1,000 US\$	555,045	2.2%	44%
Cocoa Butter	2016	Export Value	1,000 US\$	500,442	10.0%	36.3%
Coffee Extract	2016	Export Value	1,000 US\$	407,646	5.8%	29.0%
Crustaceans	2015	Export Value	1,000 US\$	273,291	0.9%	3.7%

Crop	Year	Measure	Unit	Value	Global Share	Share in SE Asia
Fish	2015	Export Value	1,000 US\$	266,361	0.3%	2.9%
Oil, coconut (copra)	2016	Export Value	1,000 US\$	168,302	5.8%	7.7%
Refined Sugar	2016	Export Value	1,000 US\$	108,690	0.8%	4.6%
Mollusks, aquatic invertebrates	2015	Export Value	1,000 US\$	37,513	1.1%	9.7%

Source: FAOSTAT

SME in Food and Agriculture

Malaysia has a vibrant SME sector. SMEs account for 97 percent of all businesses, 66 percent of employment, and 17.3 percent of export value.⁹⁶ Additionally, SMEs contribute to 37.1 percent of GDP and achieved a growth rate of 7.2 percent per annum from 2010-17, which exceeded the national growth rate.

SMEs within the agriculture sector play a small role in Malaysia's economy. Only 1.1 percent of the 907,065 SMEs in Malaysia are in the agriculture sector, according to Malaysia's Department of Statistics⁹⁷. Among the 10,218 agricultural SMEs, the majority (80.6%) were involved in crop cultivation and livestock, fisheries (16.1%) and forestry and logging (3.3%).⁹⁸ Agricultural SMEs contribute to 4.1 percent of GDP as of 2017. The data suggests that large agricultural enterprises are far more productive than SMEs, as the 1,410 large agricultural firms account for more than half agriculture's total contribution to GDP.

A 2016 survey of food processing SMEs in Malaysia found that these firms struggle to innovate and compete with large firms and MNCs for several reasons, notably the limited access to skilled labor and managers, finance and information.⁹⁹ Clustering could help SMEs overcome some of these challenges, particularly in reducing information asymmetries and sharing in research and development. Such information could promote innovation and export-oriented growth.

⁹⁶ <http://www.epu.gov.my/sites/default/files/Chapter%208.pdf>

⁹⁷ <http://www.smecorp.gov.my/images/SMEAR/latest/2/Appendix%201.pdf>

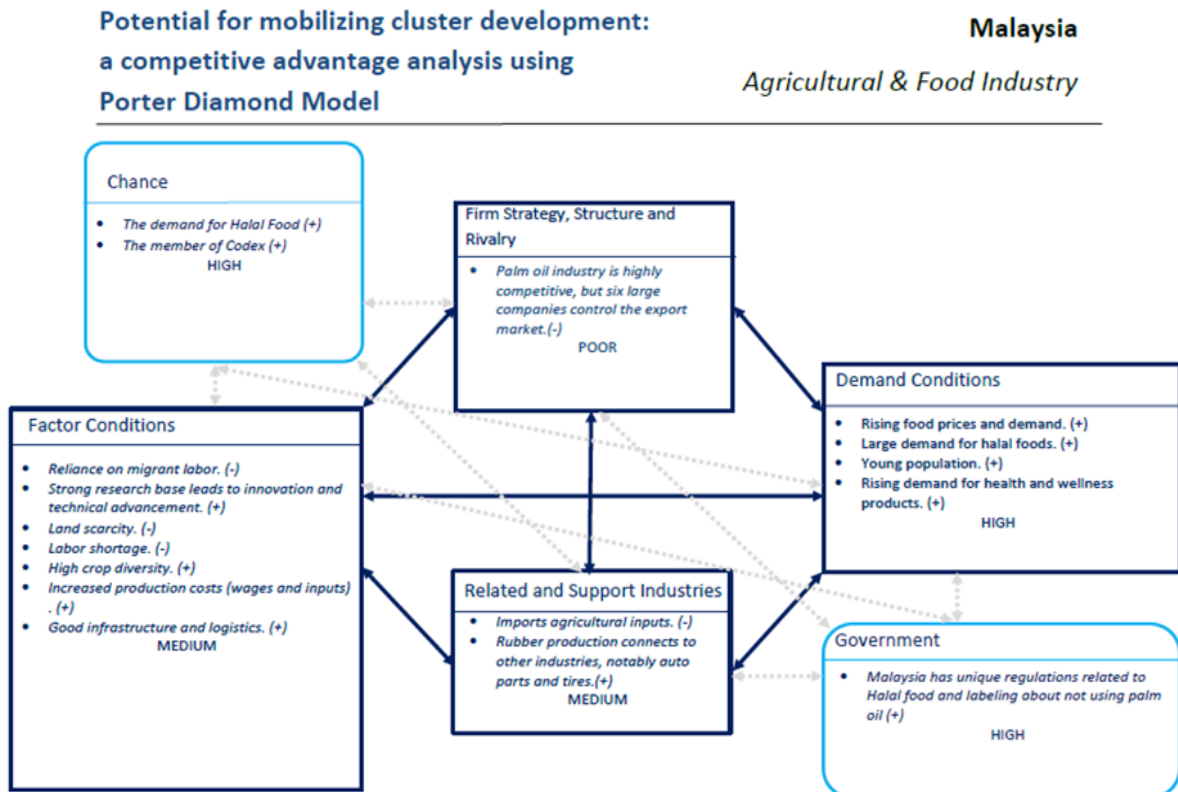
⁹⁸ http://www.smecorp.gov.my/images/SMEAR/latest/2/Census%20English_FINAL.pdf

⁹⁹ Nor, N., Bhuiyan, A., Said, J., & Alam, S. (2016). Innovation barriers and risks for food processing SMEs in Malaysia: A logistic regression analysis. *Malaysian Journal of Society and Space*.

Cluster Mobilization

The Malaysian Ministry of Agriculture and Agro-based Industry supports Permanent Food Production Parks, which are essentially clusters that bring farms and agri-businesses together to achieve economies of scale to strengthen commercial production of targeted crops. There are also established formal clusters in Malaysia, such as the Palm Oil Industrial Cluster (POIC) in Lahad Datu that creates an ecosystem for value-add palm oil products.

Figure 23: Potential for mobilizing cluster development (Malaysia)



Government Policy

The National Agrofood Policy (NAP) 2011-2020 is the Malaysian government's key plan for the agriculture sector. The plan has several goals, including achieving food security, strengthening human capital, increasing the sector's contribution to GDP and improving the value chain.¹⁰⁰ The plan called for the country to become self-sufficient in producing 32 crops and livestock products. At the half-way point of the NAP (2015), Malaysia had achieved self-sufficiency ratios of over 100 percent for 17 of the commodities. Rice (72.3%) mutton (11.4%) and beef (24%) are important commodities with shortfalls. Malaysia remains an importer of the staple crop rice. ASEAN neighbors Thailand and Vietnam are important sources of rice for Malaysia.

The Malaysian government uses the Food Act 1983 and the Food Regulations of 1985, and subsequent addendums, to govern food safety. The standards are similar to Codex; however, Malaysia has unique regulations related to Halal food and labeling about not using palm oil.¹⁰¹

Recommendations

- 1) **Develop Halal food cluster** – Malaysia brands itself as a global halal hub.¹⁰² It should continue to maximize its competitive advantage in this area. Malaysia was one of the first countries to develop halal standards, which continue to be recognized globally. There is a substantial and expanding market for halal foods. Currently, the halal food industry is worth US\$650 million. Additionally, about 60 percent of Malaysia's population is Muslim, meaning it has substantial domestic demand for halal-certified products. Despite the country's strong track record in halal food production, the sector's growth is stunted by low research and development and supply inconsistencies. Clusters may help to alleviate these weaknesses and enable Malaysia to capitalize on the growing demand for halal products.

Myanmar

Agriculture contributes to over 30 percent of GDP and 50 percent of total employment in Myanmar. Although agriculture remains an integral sector in Myanmar, the sector's contribution has declined significantly since 2000 when it contributed to over 50 percent of GDP.¹⁰³ Low land and labor productivity limit the competitiveness of the agriculture sector. For example, Myanmar's rice paddies have an average yield of 2.7 tons per hectare, which is among the lowest rates in all of Asia. Like most of ASEAN, rice is the staple crop of Myanmar. While most other crops are more productive, Myanmar's agriculture efficiency remains low compares to its neighbors. When describing the country's agriculture, the World Bank writes that farmers garner "low earnings for both paddy and non-paddy production, although earnings from the latter are higher, [which] reflects on the low agricultural competitiveness of Myanmar relative to its regional neighbors."¹⁰⁴

Outside of beans and pulses, for which Myanmar is ASEAN's leading exporter, Myanmar has weak value chains that make it difficult for the country to compete in global markets. The country faces a number of challenges within its value chain, specifically transportation, post-harvest processing and cold storage.¹⁰⁵ The country is a net food importer because of the obstacles mentioned. Still, the country has potential to improve the productivity and competitiveness of its agriculture sector if

¹⁰⁰ http://ap.ffc.agnet.org/ap_db.php?id=853&print=1

¹⁰¹ Wahab, A. (2017). *Global Agricultural Information Network (GAIN) Report - Malaysia* (Issue brief) (J. Dong, Approver). USDA.

¹⁰² <http://www.itc.gov.my/tourists/discover-the-muslim-friendly-malaysia/malaysia-the-worlds-leading-halal-hub/>

¹⁰³ *Myanmar National Food and Agriculture Systems Project* (Rep.). (2018). The World Bank.

¹⁰⁴ *Myanmar National Food and Agriculture Systems Project* (Rep.). (2018). The World Bank.

¹⁰⁵ *Myanmar National Food and Agriculture Systems Project* (Rep.). (2018). The World Bank.

the government continues to promote economic liberalization. In addition, the country has a geographic competitive advantage over most countries given its strategic location between India and China.

Table 14: Overview of Myanmar market

Category	Data
Population (million)*	56.3
Rural Population (% of total)*	63.9
GDP (PPP) (USD)*	\$283.5 billion
GDP (PPP) per capita (USD)*	\$5,500
GDP from Agriculture*	36.1%
Labor Force in Agriculture*	70%
Agricultural Land Use*	19.2%
Arable Land*	16.5%
Net Agriculture Trade Value^	-\$1.2 billion
Value of Agricultural Production^	\$ 17,670,038.76

Sources: *CIA World Factbook 2017; ^Food and Agriculture Organization of the United Nations (2015)

Table 15: Export Value by type of crop (Myanmar)

Crop	Year	Measure	Unit	Value	Global Share	Share in SE Asia
Fruit & Vegetables	2015	Export Value	1,000 US\$	1,182,607	0.5%	8.7%
Sugar, Total (Raw Equiv.)	2016	Export Value	1,000 US\$	931,756	3.0%	26.0%
Beans (dry)	2016	Export Value	1,000 US\$	699,387	20.2%	90.6%
Fish	2015	Export Value	1,000 US\$	309,045	0.4%	3.4%
Natural Rubber (dry)	2016	Export Value	1,000 US\$	171,794	1.7%	1.96%
Crustaceans	2015	Export Value	1,000 US\$	149,462	0.5%	2.0%
Rice	2015	Export Value	1,000 US\$	103,966	0.5%	1.3%

Source: FAOSTAT

SMEs in Food and Agriculture

Small-plot farmers predominately make up Myanmar's agriculture sector. The majority of farmers, as many as 80 percent according to one survey, focus on rice cultivation.¹⁰⁶ The average plot in Myanmar is only 2.4 hectares.¹⁰⁷ The majority (82.6%) of registered businesses in Myanmar are in the agriculture sector. Despite some improvements in recent years, Myanmar has a weak enabling environment for business. The World Bank ranked Myanmar 171st out of 190 countries in its *2018 Doing Business Report*.¹⁰⁸ Large-scale commercial farming is nascent in Myanmar.¹⁰⁹

¹⁰⁶ <https://frontiermyanmar.net/en/myanmar-agriculture-101>

¹⁰⁷ *Agribusiness Country Diagnostic – Myanmar* (Rep.). (2016). The World Bank.

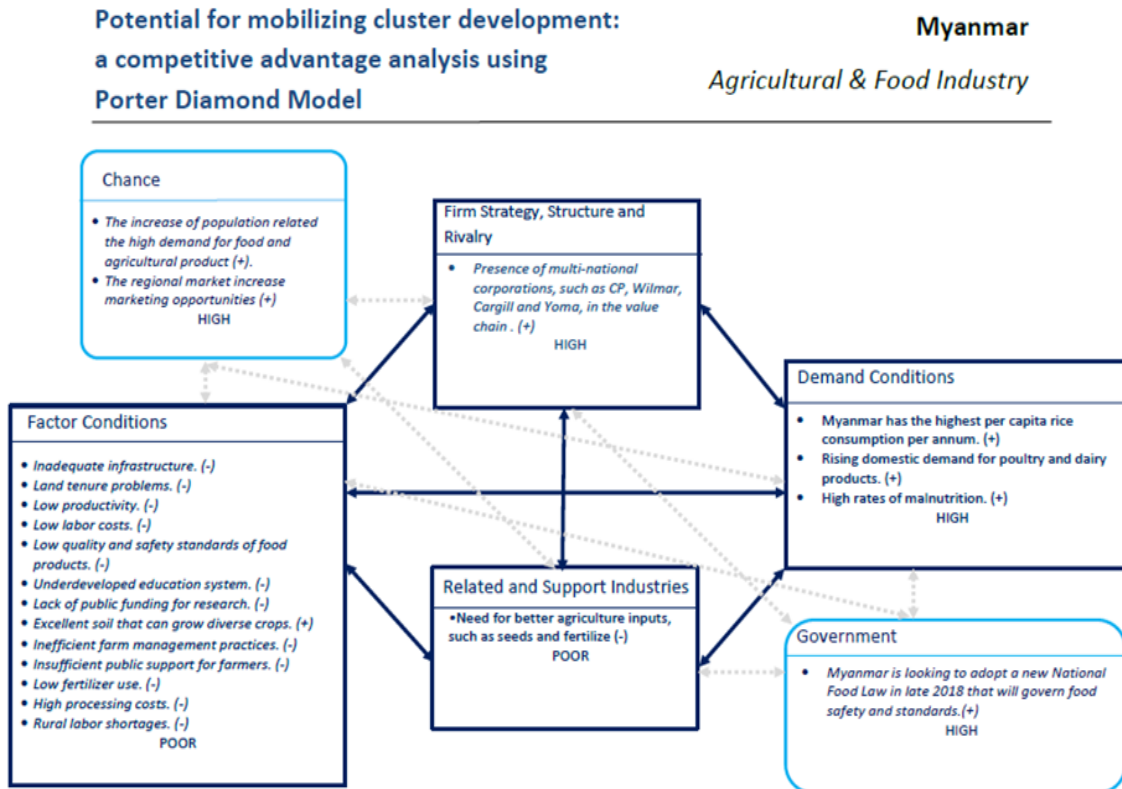
¹⁰⁸ <http://www.doingbusiness.org/data/exploreeconomies/myanmar>

¹⁰⁹ <https://www.jica.go.jp/myanmar/english/office/topics/140515.html>

Cluster Mobilization

Currently, Myanmar faces a number of obstacles in its agricultural value chain, as the factor input conditions indicate. Clusters may help improve information, technology and post-harvest processes to become more competitive in the agriculture and food industry.

Figure 24: Potential for mobilizing cluster development (Myanmar)



Government Policy

The Ministry of Agriculture and Irrigation (MOAI) follows a 20-year development plan for agriculture that runs through 2030. The plan aims to increase Myanmar's presence in global value chains, enhance food security, produce value-add products and increase "green" production.¹¹⁰ MOAI will also enhance agriculture statistics and research and development funding to create a more informed and technology-savvy industry. It should be noted that the government used to require some farmers to grow rice, but did away with this policy in 2011. However, the government still intervenes to some degree to promote rice self-sufficiency by requiring export permits for rice.¹¹¹

Myanmar is looking to adopt a new National Food Law in late 2018 that will govern food safety and standards. The majority of the country's standards comply with the guidelines established by Codex, World Organization for Animal Health (OIE), or ASEAN.¹¹²

Recommendations

- 1) **Promote good post-harvest practices** – Myanmar has problems with its post-harvest processes in the agricultural value chain. A Cambridge Economic Policy Associates' report noted that "the methods used to aggregate agricultural products are often unsanitary and result in lower quality products."¹¹³ Clustering could be a mechanism to transmit information and technology to help farmers, processors, traders and distributors improve the quality of agriculture products.
- 2) **Improve land tenure** – Only 20 percent of land is registered in Myanmar due to poor administration, a cumbersome registration process and other factors¹¹⁴. In addition, the lack of land rights contributes to credit problems, as land can be a requirement to receive a loan. The government should seek to streamline this process to improve trust and land security.
- 3) **Promote agriculture diversification** – Myanmar should take advantage of its good climate and diverse topography to enhance its competitiveness in a range of crops. Horticulture presents higher value to farmers in Myanmar than rice. Clustering could enable the country to become competitive in non-rice crops.

¹¹⁰ *Agribusiness Country Diagnostic – Myanmar* (Rep.). (2016). The World Bank.

¹¹¹ Samson, J. G., Raitzer, D. A., & Wong, L. C. (2015). *Myanmar's Agriculture Sector: Unlocking the Potential for Inclusive Growth* (Rep.). ADB.

¹¹² Aung, S. (2018). Global Agricultural Information Network (GAIN) Report - Myanmar (Issue brief) (R. Nelson, Approver). USDA.

¹¹³ *Agribusiness Country Diagnostic – Myanmar* (Rep.). (2016). The World Bank.

¹¹⁴ *Agribusiness Country Diagnostic – Myanmar* (Rep.). (2016). The World Bank.

Philippines

With 55 percent of the population living in rural areas, agriculture remains an important sector to the Philippines' economy. The sector employs about 30 percent of the labor force and contributes to 10 percent of GDP. The country's key crops include rice, for domestic consumption, as well as fruits and oils. The Philippines is competitive in exporting certain fruits and oils. For example, the country had an export value of more than US\$1 billion, which is a 39.1 percent global share. Overall though, the country is not a major exporter. In fact, the country only exports 8.3 percent of its production, which is lower than many of its neighbors.¹¹⁵ As a result, the Philippines is a net food importer.

Low productivity characterizes the agriculture sector. The Philippines' yields for important crops, such as coconut, rice and corn, are lower than several ASEAN countries.¹¹⁶ The sector's productivity and competitiveness suffers from a range of factors. The World Bank writes that "low farm productivity, high production costs, weak agricultural extension systems, low level of technology adoption, poor access to markets, weak producer organizations, inefficient supply chains and logistics system, lack of proper infrastructure (roads and irrigation), inadequate post-harvest facilities, limited access to finance, and lack of clear property rights" are conspicuous constraints in the Philippines.¹¹⁷ The Philippines' precarious location leaves it vulnerable to extreme weather and natural disasters. These events can have harmful effects on the agriculture sector. The Food and Agriculture Organization estimates that the sector lost US\$3.8 billion from 2008-13 due to weather-related events.¹¹⁸

Table 16: Overview of Philippines Market

Category	Data
Population (million)*	101
Rural Population (% of total)*	55.6%
GDP (PPP) (USD)*	\$741 billion
GDP (PPP) per capita (USD)*	\$7,300
GDP from Agriculture*	10.3%
Labor Force in Agriculture*	29%
Agricultural Land Use*	41.0%
Arable Land*	18.2%
Net Agriculture Trade Value^	-\$3.8 billion
Value of Agricultural Production^	\$20.7 billion

Sources: *CIA World Factbook 2017; ^Food and Agriculture Organization of the United Nations (2015)

¹¹⁵ *Project Appraisal Document on a Proposed Loan in the Amount of US\$99.31 Million to the Republic of the Philippines for Inclusive Partnerships for Agricultural Competitiveness Project* (Rep.). (2018, May 18).

¹¹⁶ *Project Appraisal Document on a Proposed Loan in the Amount of US\$99.31 Million to the Republic of the Philippines for Inclusive Partnerships for Agricultural Competitiveness Project* (Rep.). (2018, May 18).

¹¹⁷ *Project Appraisal Document on a Proposed Loan in the Amount of US\$99.31 Million to the Republic of the Philippines for Inclusive Partnerships for Agricultural Competitiveness Project* (Rep.). (2018, May 18).

¹¹⁸ *Project Appraisal Document on a Proposed Loan in the Amount of US\$99.31 Million to the Republic of the Philippines for Inclusive Partnerships for Agricultural Competitiveness Project* (Rep.). (2018, May 18).

Table 17: Export value by type of crop (Philippines)

Crop	Year	Measure	Unit	Value	Global Share	Share in SE Asia
Fruit and Vegetables	2016	Export Value	1,000 US\$	1,765,379	0.8%	12.8%
Animal Vegetable Oil	2016	Export Value	1,000 US\$	1,192,529	1.4%	3.5%
Oil, coconut (copra)	2016	Export Value	1,000 US\$	1,144,790	39.1%	52.6%
Bananas	2016	Export Value	1,000 US\$	618,830	5.8%	91.2%
Fish	2015	Export Value	1,000 US\$	563,887	0.7%	6.2%
Canned Pineapples	2015	Export Value	1,000 US\$	337,016	25.0%	29.9%
Pineapples	2016	Export Value	1,000 US\$	228,412	11.5%	95.9%
Crustaceans	2015	Export Value	1,000 US\$	166,652	0.6%	2.3%

Source: FAOSTAT

SMEs in Food and Agriculture

Approximately 99.6 percent of businesses in the Philippines are classified as SMEs. The SMEs employ about 70 percent of the workforce.¹¹⁹ The government classified only about 3 percent of all SMEs as in the agriculture sector.¹²⁰ However, the Philippines has a large food and beverage manufacturing industry. As of 2013, this sub-sector was valued at US\$27.8 billion.¹²¹ About 500 businesses, most of which are SMEs, make up the food and beverage sector; however, there are a number of large, dominant players in the space. These large manufacturers control most of the market share.¹²² About 90 percent of the sector's production is consumed in the domestic market.

Cluster Mobilization

The government of the Philippines already promotes clusters as a tool to increase the productivity of SMEs and enhance the agriculture sector's connections with global value chains. Examples are Davao 18 priority clusters, 13 of which are related to agriculture,¹²³ and ARC (Agrarian Reform Community) clusters.

¹¹⁹ <https://www.entrepreneur.com.ph/business-ideas/how-smes-play-an-important-role-in-the-philippine-economy>

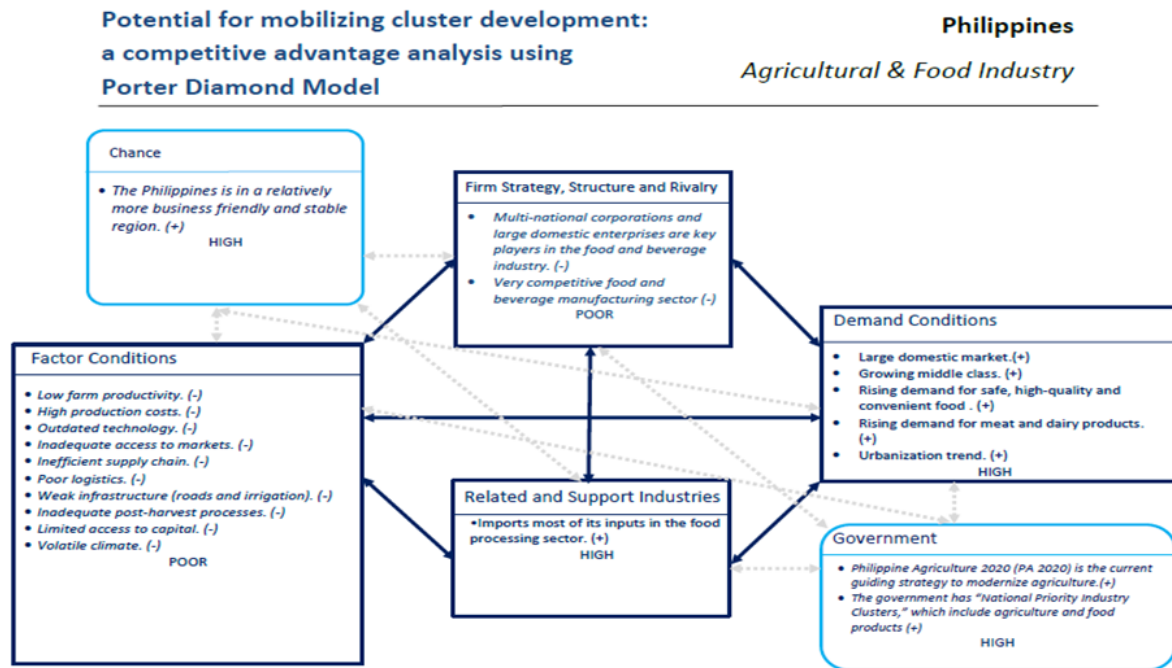
¹²⁰ Hampel-Milagrosa, A. (2014). *Micro and Small Enterprise Upgrading in the Philippines* (Rep.). German Development Institute.

¹²¹ Singian, M. C. (2014). *Booming Philippine Food Processing Industry Provides Opportunities for U.S. Ingredients* (Rep.). USDA.

¹²² <http://balinkbayan.gov.ph/invest/investment-and-business-opportunities/small-and-medium-scale-manufacturing.html#food-and-beverage-processing>

¹²³ <https://www.sunstar.com.ph/article/421901/>

Figure 25: Potential for mobilizing cluster development (Philippines)



Government Policy

Philippine Agriculture 2020 (PA 2020) is the current guiding strategy to modernize agriculture in the Philippines. It has three pillars dealing with agricultural commercialization, asset reform and social and environmental concerns that will be achieved through technology development, investment and government reform.¹²⁴ The government will promote technological advancement within its 15 agro-industrial clusters to raise productivity in the sector. The plan also calls for improving the investment environment for the private sector. PA 2020 builds on the Agriculture and Fisheries Modernization Act (AFMA) of 1997 that sought to modernize the sector so that it can compete globally.¹²⁵

The government has "National Priority Industry Clusters," which include agriculture and food products, namely rubber, cacao, processed foods and coffee.¹²⁶ According to the Department of Trade and Industry (DTI), the agriculture-related clusters alone had created 46,038 jobs and assisted 5,615 SMEs as of 2015.¹²⁷

The Philippines' Food and Drug Administration (FDA), under the Department of Health, is responsible for regulating safety and standards for processed foods and the Bureau of Agriculture and Fisheries Product Standards (BAFPS), under the Department of Agriculture, governs primary agricultural and fisheries products. The agencies use major international guidelines, such as Codex, to govern the majority of their standards related to primary and processed foods.¹²⁸

¹²⁴ <http://www.nast.ph/images/pdf%20files/Publications/Bulletins/NB%201%20PA%202020.pdf>

¹²⁵ http://ap.ftc.agnet.org/ap_db.php?id=77&print=1

¹²⁶ <https://www.dti.gov.ph/about/updates/764-national-priority-industry-clusters-surpass-targets>

¹²⁷ <http://www.manilatimes.net/6-industry-clusters-double-domestic-sales-in-2015/275392/>

¹²⁸ Ang, P. A. (n.d.). Food and Agricultural Import Regulations and Standards - Philippines (Issue brief) (E. Purdy, Approver). USDA.

Recommendations

- 1) **Focus on coconut sub-sector** – The Philippines is already the global leader in coconut copra production and export value, but the country has potential to reap enormous benefits from increasing its productivity. There is currently rising global demand for high-value coconut products, like coconut water and coconut oil. Furthermore, increased productivity would support rural economies because small-plot farmers dominate the sector. According to the FAO, “an estimated 25 million people depend on the coconut industry.”¹²⁹ Clustering, in particular, could be a solution to enhancing the productivity of small-plot farmers and SME agribusinesses.
- 2) **Increase livestock production** – The Philippines has a growing middle class and rising demand for meat products. The country should increase its meat production to match growing domestic demand. In 2017, meat imports rose by 7 percent.¹³⁰ Clustering could induce growth within the domestic sector, enabling it to capitalize on the rising demand.

Singapore

Singapore is a small nation on an island covering only 721.5 square kilometers. The country is also 100 percent urban with less than 1 percent of arable land. Given the land constraints, agriculture contributes to 0 percent of GDP and employs 1.3 percent of the labor force. Singapore does manage to export small amounts of fish, fruits and vegetables; however, no sector has substantial linkages with global value chains. Singapore only produces about 7 percent of its own food, making it a major food-importing nation.¹³¹ Singapore largely depends on the food production of other countries, including ASEAN members, for its food supply. Its chief regional food partners are Thailand, Vietnam, Malaysia and Indonesia.¹³²

Although agriculture plays a minimal role in the Singaporean economy, the country is known for innovation in the sector. For example, Singapore is home to seven vertical farms that cultivate vegetables, fish and crabs.¹³³ Most of Singapore’s food production comes from six agro technology parks. There are 217 farms on the parks’ combined 1,465 hectares of land.¹³⁴ The parks, overseen by the Agri-Food & Veterinary Authority of Singapore (AVA), support research and development, processing and packaging facilities and cold room storage. Furthermore, they use a vertical integration scheme in which farm production goes directly to supermarkets.

Singapore’s food manufacturing sector has close to 900 processing businesses that employ 30,000 workers and contribute to 1.0 percent of GDP.¹³⁵

¹²⁹ OECD-FAO *Agricultural Outlook 2017-2026* (Rep.). (2017). OECD/FAO.

¹³⁰ <https://businessmirror.com.ph/phl-meat-imports-up-7-in-2017/>

¹³¹ <https://ourworld.unu.edu/en/farming-in-the-sky-in-singapore>

¹³² <https://www.ava.gov.sg/docs/default-source/publication/annual-report/ava-ar-2016-17>

¹³³ <https://www.straitstimes.com/lifestyle/vertical-farms-on-the-rise-in-land-scarce-singapore>

¹³⁴ <https://www.ava.gov.sg/explore-by-sections/farms/land-farms/farming-in-singapore>

¹³⁵ <https://spring.enterprisesg.gov.sg/Developing-Industries/FM/Pages/food-manufacturing.aspx>

Table 18: Overview of Singapore market

Category	Data
Population (million)*	5.67
Rural Population (% of total)*	0%
GDP (PPP) (USD)*	\$471.9 billion
GDP (PPP) per capita (USD)*	\$85,300
GDP from Agriculture*	0%
Labor Force in Agriculture*	1.3%
Agricultural Land Use*	1.0%
Arable Land*	0.9%
Net Agriculture Trade Value^	-\$1.585 billion
Value of Agricultural Production^	\$29.6 million

Sources: *CIA World Factbook 2017; ^Food and Agriculture Organization of the United Nations (2015)

Table 19: Export value by type of crop (Singapore)

Crop	Year	Measure	Unit	Value	Global Share	Share in SE Asia
Fruit and Vegetables	2016	Export Value	1,000 US\$	367,134	0.20%	2.66%
Fish	2015	Export Value	1,000 US\$	231,137	0.29%	2.53%
Crustaceans	2015	Export Value	1,000 US\$	44,505	0.15%	0.61%
Canned Pineapples	2015	Export Value	1,000 US\$	10,275	0.8%	0.9%
Mollusks, aquatic invertebrates	2015	Export Value	1,000 US\$	4,102	0.12%	1.06%

Source: FAOSTAT

SMEs in Food and Agriculture

There were 218,900 SMEs in Singapore as of 2017, accounting for 99.5 percent of all businesses.¹³⁶ SMEs employ about 65 percent of the workforce. As of 2013, there were 6,751 businesses in the food and beverage sector and 844 businesses involved in food manufacturing.¹³⁷ Nearly all of the food and beverage businesses were classified as SMEs.

Cluster Mobilization

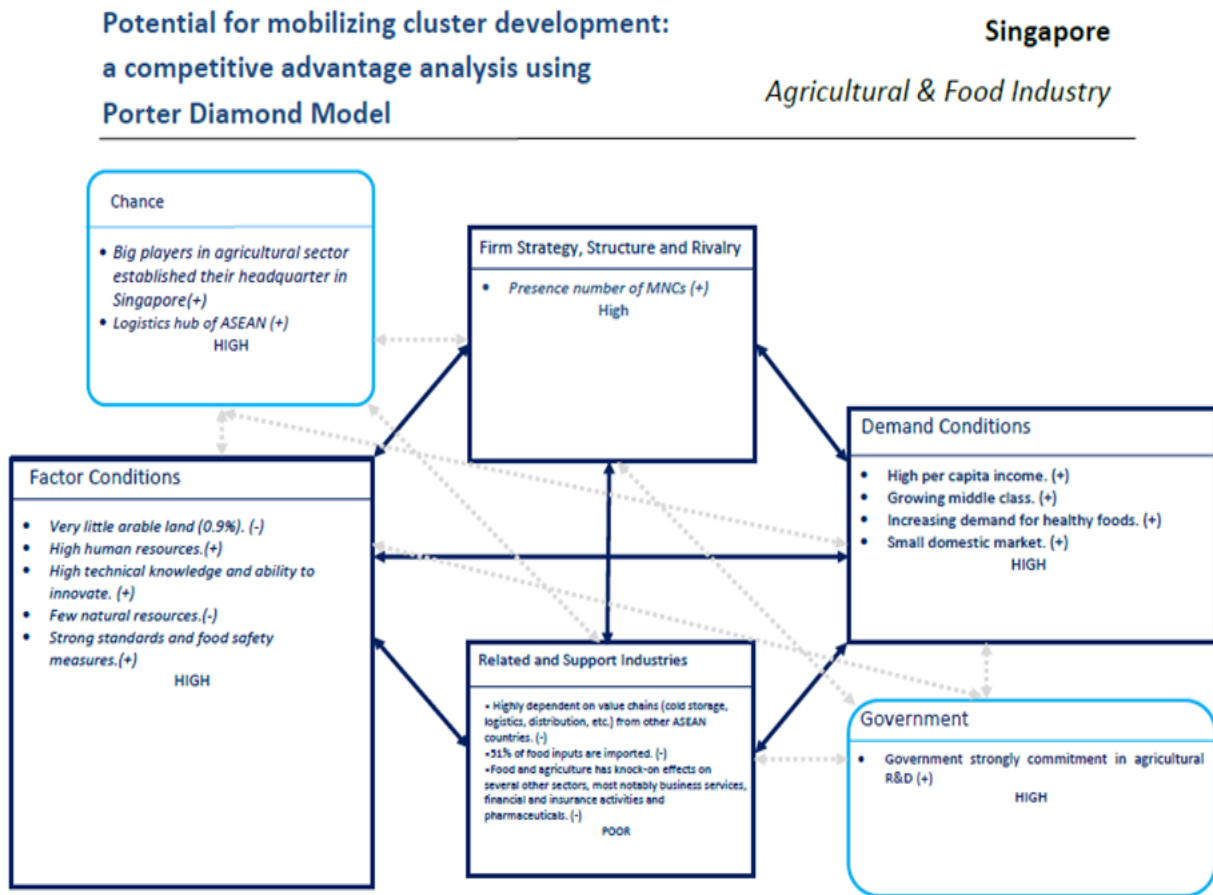
The AVA's six agro technology parks essentially function as clusters because they bring farmers together and provided integrated post-harvest services all the way to the market. In addition, Singapore has an agri-biotechnology cluster in its Agri-Bio Park.¹³⁸

¹³⁶ <https://www.singstat.gov.sg/find-data/search-by-theme/industry/enterprises/latest-data>

¹³⁷ <https://www.smeportal.sg/content/smeportal/en/industries/food/industry-snapshot.html>

¹³⁸ <https://www.export.gov/article?id=Singapore-Agricultural-Sectors>

Figure 26: Potential for mobilizing cluster development (Singapore)



Government Policy

The AVA issued the Farm Transformation Map in 2017 to serve as the government's guide for local agriculture. The Map focuses on maximizing available space, promoting innovation, developing the workforce and producing food for both the domestic and international markets.¹³⁹ Although agriculture is done on a small scale, the Singapore government helps local farmers increase productivity through technology using the Agriculture Productivity Fund (APF). In 2016, the government also issued a Food Manufacturing Industry Transformation Map to drive innovation, internationalization, enhance productivity and create good jobs¹⁴⁰. The Map aims to make Singaporean agri-businesses more competitive in the global market.

The government of Singapore maintains strict standards to monitor food imports, which account for 90 percent of the country's total food. The AVA is the government body responsible for overseeing food standards and safety regulations. Thus, the AVA implements the Sale of Food Act, Control of Plants Act, Feeding Stuffs Act, Wholesome Meat and Fish Act, and Animals and Birds Act, all of

¹³⁹ <https://www.ava.gov.sg/docs/default-source/publication/annual-report/ava-ar-2016-17>

¹⁴⁰ <https://www.sgsme.sg/news/government/singapore-targets-2000-new-pmet-jobs-food-manufacturing-industry-transformation>

which are important laws related to food safety and standards.¹⁴¹ The government's standards are based on the international guidance outlined by Codex and OIE. The AVA regularly updates its regulations and maintains strict monitoring procedures to ensure high-quality imports.

Recommendations

- 1) Focus on innovation to develop healthy and functional products to meet changes in consumer demand.

Thailand

Agriculture has been a key component of Thailand's economy for decades. Referred to as the "kitchen of the world," Thailand has abundant natural resources and an ideal climate for many crops. Although the country produces a high agricultural output volume, its productivity is relatively low. In fact, the yield of rice, the country's staple crop, is the lowest among all ASEAN countries except Brunei. Furthermore, agriculture accounts for over 30 percent of the workforce yet contributes only 10 percent of GDP. Agriculture's share of employment, though, has fallen considerably in recent years, down from over 40 percent in the early 2000s, a trend that is likely to continue given Thailand's transition to becoming an "aged society."

Thailand has a diverse agriculture base, ranking among the world's top producers in rice, corn, sugar, cassava, tuna, pork and poultry. In addition, Thailand is a leading producer of non-food crops, notably rubber, for which it produces over 34 percent of the world's output. Non-food agriculture falls outside of the lens of this study; however, it is important to note that Thailand has a substantial non-food agricultural base. According to the FAO, the country's top three commodities by export value are rubber, rice and canned tuna.

¹⁴¹ Sugita, I. S. (2017). *Food and Agricultural Import Regulations and Standards - Singapore* (Issue brief) (J. Dong, Approver). USDA.

Table 20: Overview of Thailand market

Category	Data
Population (million)*	67.98
Rural Population (% of total)*	49.6%
GDP (PPP) (USD)*	\$1.108 trillion
GDP (PPP) per capita (USD)*	\$16,100
GDP from Agriculture*	10.4%
Labor Force in Agriculture*	32.2%
Value of Agricultural Production (million USD)^	\$31.6 billion
Agricultural Land Use*	41.2%
Arable Land*	30.8%
Net Agriculture Exports/Imports^	\$16,906,428,000
Net Agriculture Production Value^	\$316,171,293,743

Sources: *CIA World Factbook 2017; ^Food and Agriculture Organization of the United Nations (2015)

Table 21: Export value by type of crop (Thailand)

Crop	Year	Measure	Unit	Value	Global Share	Share in SE Asia
Fruit and Vegetables	2016	Export Value	1,000 US\$	5,211,619	2.2%	37.8%
Rice	2015	Export Value	1,000 US\$	4,544,023	20.0%	57.5%
Rubber natural dry	2016	Export Value	1,000 US\$	3,279,083	31.7%	37.4%
Fish	2015	Export Value	1,000 US\$	3,251,305	4.0%	35.6%
Meat, chicken, canned	2016	Export Value	1,000 US\$	2,196,436	27.8%	95.8%
Crustaceans	2015	Export Value	1,000 US\$	1,746,493	5.8%	23.9%
Cassava (dried)	2015	Export Value	1,000 US\$	1,538,730	76.7%	78.6%
Sugar refined	2016	Export Value	1,000 US\$	1,268,730	8.4%	47.0%
Starch, cassava	2016	Export Value	1,000 US\$	1,112,428	78.2%	81.1%
Pineapples canned	2016	Export Value	1,000 US\$	591,952	43.3%	52.5%
Meat, chicken	2016	Export Value	1,000 US\$	496,217	2.6%	92.8%
Maize	2016	Export Value	1,000 US\$	191,153	0.7%	65.1%

Source: FAOSTAT

Top Food and Agricultural Products

Rice

Thailand remains one of the world's leaders in rice production and trade. The country produced 27.7 million metric tons of rice, or nearly 4 percent of the world's total output, in 2015 and is the second largest exporter in the world, trailing only India.¹⁴² The country is known for producing high-quality rice that commands premium prices in international markets. Although approximately 50 percent of total output goes to domestic consumption, Thailand churns out enough rice to serve as a key participant in global value chains. Revenue from rice exports totaled approximately US\$4.5 billion for Thailand in 2015, with China (US\$490 million), the United States (US\$415.4m), Benin (US\$307 million), the Philippines (US\$304 million) and Nigeria (US\$250 million) being its largest recipients.¹⁴³

Thailand produces three types of rice: white, jasmine, and parboiled. Within these sub-sectors of the rice industry, Thailand holds a substantial portion of the export market. For white rice, Thailand has a 24 percent global market share, with its primary export destinations being China (11%) and ASEAN countries, particularly Indonesia (22%), Malaysia (11%) and the Philippines (10%). For parboiled rice, Thailand has a 36 percent global market share. Most of its export output is sent to African nations, particularly Benin (34%), Cameroon (23%), and South Africa (19%). Thailand dominates the high-value jasmine rice market with a 60 percent share of global exports. Its primary trade partners for jasmine rice are the United States (28%), China (13%), Hong Kong (12%), Canada (6%) and Singapore (5%).¹⁴⁴

Despite Thailand's strong position in the global rice export market, the country's total production and global market share has fallen in recent years. Thailand's total output fell by approximately three million metric tons from 2005 to 2015. Although Thai exporters have been able to capture a higher value from rice, its global share dropped from 24.2 percent in 2005 to 20.0 percent in 2015.¹⁴⁵ These changes stem from stiffer global competition from the United States, India and Pakistan, as well as other ASEAN exporters, notably Vietnam, Cambodia and Myanmar.¹⁴⁶

Rice farmers account for approximately 50 percent of all agricultural households in Thailand and have been affected by several government policies in recent years.¹⁴⁷ According to the FAO, "between 1981 and mid-2014, the Thai Government's rice policy was primarily carried out through a series of rice pledging schemes, which provided price support to rice producers to prevent farmers from selling their crop when prices were low."¹⁴⁸ The rice pledging scheme, however, was reduced dramatically in 2014 after an aggressive scheme that began in 2011 became costly, inefficient and harmful to Thailand's exporting position. The government maintains a "limited" scheme and also added a compensation guarantee to rice farmers. As of July 2017, the government provided a guarantee of roughly US\$37 per rai.

¹⁴² FAO

¹⁴³ <https://oxfordbusinessgroup.com/analysis/price-rice-despite-slowdown-production-grain-remains-powerful-commodity-both-home-and-abroad>

¹⁴⁴ https://www.krungsri.com/bank/getmedia/83a146ea-a14f-41c7-9e80-9214a5d9b963/IO_Rice_201705_EN.aspx

¹⁴⁵ FAO

¹⁴⁶ https://www.krungsri.com/bank/getmedia/83a146ea-a14f-41c7-9e80-9214a5d9b963/IO_Rice_201705_EN.aspx

¹⁴⁷

https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Rice%20Market%20and%20Policy%20Changes%20Over%20the%20Past%20Decade_Bangkok_Thailand_1-18-2017.pdf

¹⁴⁸ <http://www.fao.org/3/i8683en/l8683EN.pdf>

Cassava

Thailand holds a commanding position in the export value of cassava. In 2015, the country produced 32,357,741 metric tons of cassava and earned an export value of over US\$1.5 billion for dried cassava and nearly US\$1.2 billion for starch cassava. In both sub-sectors, Thailand controls 75-80 percent of the global export market.

Cassava has a range of food and non-food uses, each of which has a unique value chain. Common uses include ethanol, animal feed, alcohol, paper, food and drink and cosmetics.¹⁴⁹ Because of its diverse uses, cassava outputs serve as inputs for many other industries within the global and ASEAN economy.

Thailand experienced tremendous growth in the value of cassava agriculture over the past 15 years; however, the reduction in demand in China, the largest importer of Thai cassava, combined with the falling price of similar starch-based crops will likely lead to limited growth of Thailand's cassava exports in the near future.¹⁵⁰ Meanwhile, Vietnam and Cambodia have also seen growth in their cassava exports over the past decade and could reduce Thailand's global market share.

Sugarcane

Thailand is the leading sugar producer (54.3% of total production) and exporter (78%) in ASEAN. Thailand ranks second in the world in total sugar exports with a market share of 11 percent. It benefits from lower transportation costs to China, the world's largest importer of sugar, and ASEAN nations than Brazil, the global export leader.¹⁵¹ Thailand's key export markets for sugar include Indonesia, Myanmar, China, and Japan.

Large firms dominate the sugar industry with Mitr Phol, Thai Roong Ruang, Thai Ekalak and Khon Kaen owning 21 of the nation's 51 mills and producing 54.42 percent of the output.¹⁵² Like Cassava, sugarcane has multiple uses, such as inputs for ethanol, paper and fertilizer, and is connected with several industries outside of food and agriculture.

Seafood & Fish

Seafood and Fish is another important export sector in Thailand, generating more than US\$5 billion per annum. With both fish and crustaceans, Thailand has a 4-6 percent share of the total international export market. Thailand does particularly well with canned tuna, ranking as top exporter in the world with a 44 percent market share. The sector employs about 600,000 people.

It is important to note that the sector has received international scrutiny for labor and human rights abuses. The International Labour Organisation (ILO) has reported incidences of forced labor.¹⁵³ In addition, the European Union (EU) has threatened to ban trade with Thailand due to illegal, unreported and unregulated (IUU) fishing.¹⁵⁴

¹⁴⁹ https://www.krungsri.com/bank/getmedia/709bbaca-5132-40c2-970f-33253ecc5b50/IO_Cassava_2017_EN.aspx

¹⁵⁰ https://www.krungsri.com/bank/getmedia/709bbaca-5132-40c2-970f-33253ecc5b50/IO_Cassava_2017_EN.aspx

¹⁵¹ https://www.krungsri.com/bank/getmedia/d81281c6-531f-48a0-8801-8f15c6402347/IO_Sugar_2016_EN.aspx

¹⁵² https://www.krungsri.com/bank/getmedia/d81281c6-531f-48a0-8801-8f15c6402347/IO_Sugar_2016_EN.aspx

¹⁵³ <https://www.reuters.com/article/us-thailand-fishing-slavery/progress-and-persistent-abuses-in-thailands-fishing-industry-says-u-n-idUSKCN1GJ0IY>

¹⁵⁴ <https://www.theguardian.com/environment/2015/apr/21/eu-threatens-thailand-with-trade-ban-over-illegal-fishing>

Canned Pineapples

With a market share of almost 42 percent, Thailand is the world's leading exporter of canned pineapples. Thailand generated US\$564 million from canned pineapple exports in 2015.¹⁵⁵ This is an example of a successful value-add industry. In the midstream of the supply chain, manufacturers ensure quality processes for canning, packing and storing the products. The manufacturers connect to upstream producers through contract farming. About 70 percent of Thailand's canned pineapples are distributed to international markets, notably the United States, Japan and Europe.¹⁵⁶

SMEs in Food and Agriculture

In Thailand, SMEs account for over 99.7 percent of all businesses and 80.4 percent of employment.¹⁵⁷ Despite important role in job creation, Thai SMEs are characterized by low productivity, contributing to only 42.5 percent of GDP, and struggle to compete globally. According to the Asian Development Bank (ADB), "SMEs have had very limited participation in export industries."¹⁵⁸

There are only 36,236 agricultural SMEs (1.3% of all businesses).¹⁵⁹ More specifically, there are about 8,500 food and beverage manufacturers, 97 percent of which are classified as SMEs.¹⁶⁰ The small to medium-sized businesses focus on the domestic market while the large and some medium-sized businesses tend to emphasize export markets.¹⁶¹ The food and beverage manufacturing sector employs 870,000 people according to the National Food Institute. Thailand ranks among the world's leading food exporters and is considered to have a well-developed food-processing sector.

The majority of farms in Thailand are small (3.6 hectares) with low productivity.¹⁶² They face a number of challenges including the use of outdated technology, high indebtedness and an aging workforce that limit their competitiveness.

Cluster Mobilization

Thailand already has several agricultural processing clusters. These include clusters for vegetables, fruits and herbs (northern region), livestock, tapioca, sugar cane and maize (northeast region), sugarcane, pineapple and rubber (lower-central region), fruits and rubber (eastern region) and palm, seafood and rubber (southern region).¹⁶³

Thailand combined a well-developed food-processing sector with a relatively unproductive agriculture base. Still, the agriculture process produces enough raw materials to provide abundant, cheap raw materials for the processing sector. Clusters may provide an opportunity to enhance farm productivity while maintaining Thailand's place as one of the world's top exporters of food products.

¹⁵⁵ FAO

¹⁵⁶ <https://pdfs.semanticscholar.org/45ff/0f6fc15204273d9c32b45a45859bb79ece68.pdf>

¹⁵⁷ Wangtal, S. (2017). *Thai SMEs - Going Global*. OSMEP.

¹⁵⁸ <https://www.adb.org/sites/default/files/linked-documents/cps-tha-2013-2016-psa.pdf>

¹⁵⁹ Wangtal, S. (2017). *Thai SMEs - Going Global*. OSMEP.

¹⁶⁰ Ngammongkolrat, A. (2013). *Food Industry in Thailand "Kitchen of the world"* (Rep.). National Food Institute.

¹⁶¹ <https://oxfordbusinessgroup.com/overview/upwards-march-raft-well-performing-industries-manufacturing-sector-set-move-further-value-chain>

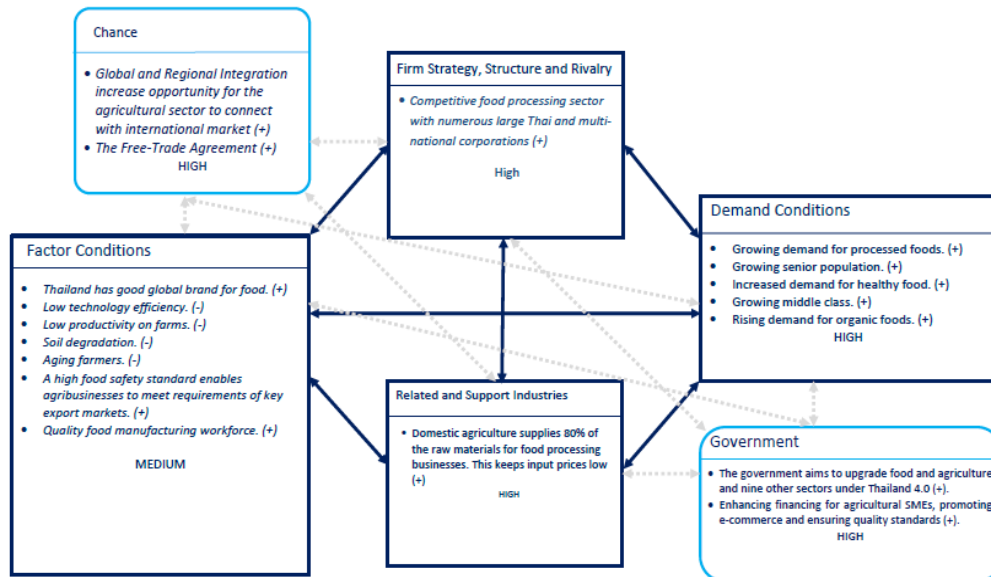
¹⁶² http://www.agribenchmark.org/fileadmin/Dateiablage/B-Cash-Crop/Conferences/2010/Presentations/Thailand_Isvilanonda.pdf

¹⁶³ http://www.boi.go.th/upload/content/BOI-brochure-cluster%20area-EN-20151116_53354.pdf

Figure 27: Potential for mobilizing cluster development (Thailand)

Potential for mobilizing cluster development:
a competitive advantage analysis using
Porter Diamond Model

Thailand
Agricultural & Food Industry



Government Policy

The Thai government follows the Thailand 4.0 policy that guides the development of multiple industries with the aim of transforming the country to a technology and innovation-based economy. The government aims to upgrade food and agriculture and nine other sectors under Thailand 4.0. Specifically, Thailand 4.0 singles out clusters as an avenue for creating a “smart” and integrated agricultural system. This includes enhancing financing for agricultural SMEs, promoting e-commerce and ensuring quality standards.¹⁶⁴ For SMEs in general, the policy aims to create “global” enterprises by creating supply chain linkages between SMEs and large corporations, augmenting financial tools and leveraging e-commerce. Thailand 4.0 looks to help SMEs contribute to over 50 percent of GDP by 2021.

The Food and Drug Administration, under the Ministry of Public Health, is responsible for the implementation of Food Act of B.E. 2522 (1979), the law that governs food standards. The comprehensive standards include regulations related to labeling, manufacturing licensing, product registration, compliance monitoring, food surveillance, nutritional claims, additives, packaging, and pesticide residues.¹⁶⁵ For manufactured foods, Thailand requires 57 specific types of products to follow Good Manufacturing Practices (GMP). Most food standards and regulations in Thailand adhere to Codex guidelines, though a ban on the use of feed additive Ractopamine in pork is a notable exception.

¹⁶⁴ http://mddb.apec.org/Documents/2016/MM/SMEMM/16_smemm_010.pdf

¹⁶⁵ Preechajarn, S., & Sirikeratikul, S. (2018). *Food and Agricultural Import Regulations and Standards - Thailand* (Issue brief) (P. Welcher, Approver). USDA.

Recommendations

- 1) **Enhance agricultural productivity** – Despite its contribution to employment, agriculture in Thailand is relatively unproductive, limiting its contribution to GDP. Furthermore, farmers account for roughly half of the bottom 40 percent of the income distribution, meaning that farmers are disproportionately among the poor.¹⁶⁶ Improving extension programs and connecting rural farmers could enhance technology transfer and raise productivity on farms. Improved agricultural productivity would likely induce positive add-on effects for the adjacent agribusiness sector.
- 2) **Focus on high-value, niche products** – Clusters could help Thailand become a global leader in high-value, niche products, such as organic food and food for the elderly. Large domestic demand for these products could buoy development in these areas.

Vietnam

Agriculture and food make an important contribution to Vietnam's economy. The country has a number of internationally competitive exports, notably rice, coffee, cashews and cassava. The sector employs nearly half the workforce and contributes to 17.4 percent of GDP. Despite its importance, the sector is characterized by low productivity. Furthermore, the country exports mostly low value, raw commodities rather than processed, value-add products.¹⁶⁷ In fact, over 80 percent of Vietnam's agricultural exports were primary commodities as of 2013.¹⁶⁸ Vietnam's agricultural processing sector is underdeveloped and struggles to produce value-added products and meet international standards.¹⁶⁹ The country faces problems throughout the value chain, including post-harvest storage, outdated technology and inadequate quality control. These obstacles have resulted in Vietnam being a net food importer.

Top Food and Agricultural Products

Rice

After Thailand, Vietnam is the largest rice exporter in ASEAN. Vietnam generates an export value of US\$2,846,522 and ranks as the third largest rice-exporting nation in the world. Although Vietnam has the highest rice yield in ASEAN, it primarily produces low-quality rice.¹⁷⁰ As a result of excessive pesticide use and damaged grains during the storage and milling processes, much of Vietnam's rice fails to meet the standards of high-value markets, such as the United States, the European Union, and Japan.¹⁷¹

Vietnam has a fragmented rice value chain, characterized by small-plot farmers who sell to small traders and millers. The substantial use of middlemen and underdeveloped supply chain limits the income of farmers. Studies have shown that direct contract farming between producers and export enterprises can reduce the costs and raise the incomes of farmers in Vietnam.¹⁷²

¹⁶⁶ *Getting Back on Track: Reviving Growth and Securing Prosperity for All* (Rep.). (n.d.). The World Bank.

¹⁶⁷ *Transforming Vietnamese Agriculture: Gaining More from Less* (Rep.). (2016). The World Bank.

¹⁶⁸ *Transforming Vietnamese Agriculture: Gaining More from Less* (Rep.). (2016). The World Bank.

¹⁶⁹ Thang, T., & Linh, D. (2015). *Vietnam's Policies on Agricultural Restructuring* (Rep.). Institute of Policy and Strategy for Agriculture and Rural Development.

¹⁷⁰ <https://thediplomat.com/2014/04/why-cant-vietnam-grow-better-rice/>

¹⁷¹ http://ap.ffc.agnet.org/ap_db.php?id=782

¹⁷² http://ap.ffc.agnet.org/ap_db.php?id=751

Coffee

Vietnam is among the leading coffee exporting countries in the world. It produces almost 1.5 million metric tons of coffee and captures about US\$2.3 billion in value from exports.¹⁷³ The industry employs some 2.6 million people, most of whom work on small-plot farms.¹⁷⁴ Vietnam mostly produces cheaper *Robusta* beans.

Table 22: Overview of Vietnam Market

Category	Data
Population (million)*	94.4
Rural Population (% of total)*	67.4%
GDP (PPP) (USD)*	\$552.3 billion
GDP (PPP) per capita (USD)*	\$6,000
GDP from Agriculture*	17.4%
Labor Force in Agriculture*	48%
Agricultural Land Use*	34.8%
Arable Land*	20.6%
Net Agriculture Exports/Imports Value [^]	-\$13,056,388
Value of Agricultural Production [^]	\$ 31,626,605.67

Sources: *CIA World Factbook 2017; [^]Food and Agriculture Organization of the United Nations (2015)

Table 23: Export value by type of crop (Vietnam)

Crop	Year	Measure	Unit	Value	Global Share	Share in SE Asia
Fish	2015	Export Value	1,000 US\$	3,053,099	3.8%	33.4%
Crustaceans	2015	Export Value	1,000 US\$	2,984,166	10.0%	40.8%
Rice	2015	Export Value	1,000 US\$	2,846,522	12.5%	36.0%
Coffee	2015	Export Value	1,000 US\$	2,268,605	11.2%	64.1%
Cashew nuts, shelled	2016	Export Value	1,000 US\$	1,986,029	53.0%	95.7%
Rubber natural dry	2015	Export Value	1,000 US\$	779,209	7.5%	8.9%
Cassava (dried)	2015	Export Value	1,000 US\$	365,286	18.2%	18.7%
Coffee, roasted	2016	Export Value	1,000 US\$	269,686	2.5%	88.3%
Starch, cassava	2016	Export Value	1,000 US\$	237,606	16.7%	17.3%

¹⁷³ FAO

¹⁷⁴ <https://www.bbc.co.uk/news/magazine-25811724>

SMEs in Food and Agriculture

SMEs account for 98 percent of all businesses and 50 percent of employment while contributing to 40 percent of GDP.¹⁷⁵ Vietnam has relatively few “medium” sized enterprises (“missing middle”), hinting at the lack of integration between the dominant multi-national corporations (MNCs) and state-owned enterprises (SOEs) and domestic enterprises.¹⁷⁶ The vast majority of SMEs are micro and small. Large enterprises in Vietnam do not rely on domestic SMEs for inputs, which limits technology and knowledge transfer.

SMEs comprise 95 percent of the 5,979 agribusinesses in Vietnam and employ 451,360 people, or 1 percent of the total workforce.¹⁷⁷ Low productivity, bad inputs and inadequate processing characterize Vietnam’s agribusiness sector.¹⁷⁸ As such, the sector is not regionally competitive.

Cluster Mobilization

The World Bank notes that there are very few agribusiness clusters in Vietnam but they are badly needed.¹⁷⁹ Overall, both agriculture and food processing are fragmented sectors comprised largely of SMEs with low productivity and capacity. Expediting cluster development could help these farms and SMEs adopt modern technology, access capital and improve standardization.

¹⁷⁵ <https://english.vov.vn/economy/sme-development-in-vietnam-358262.vov>

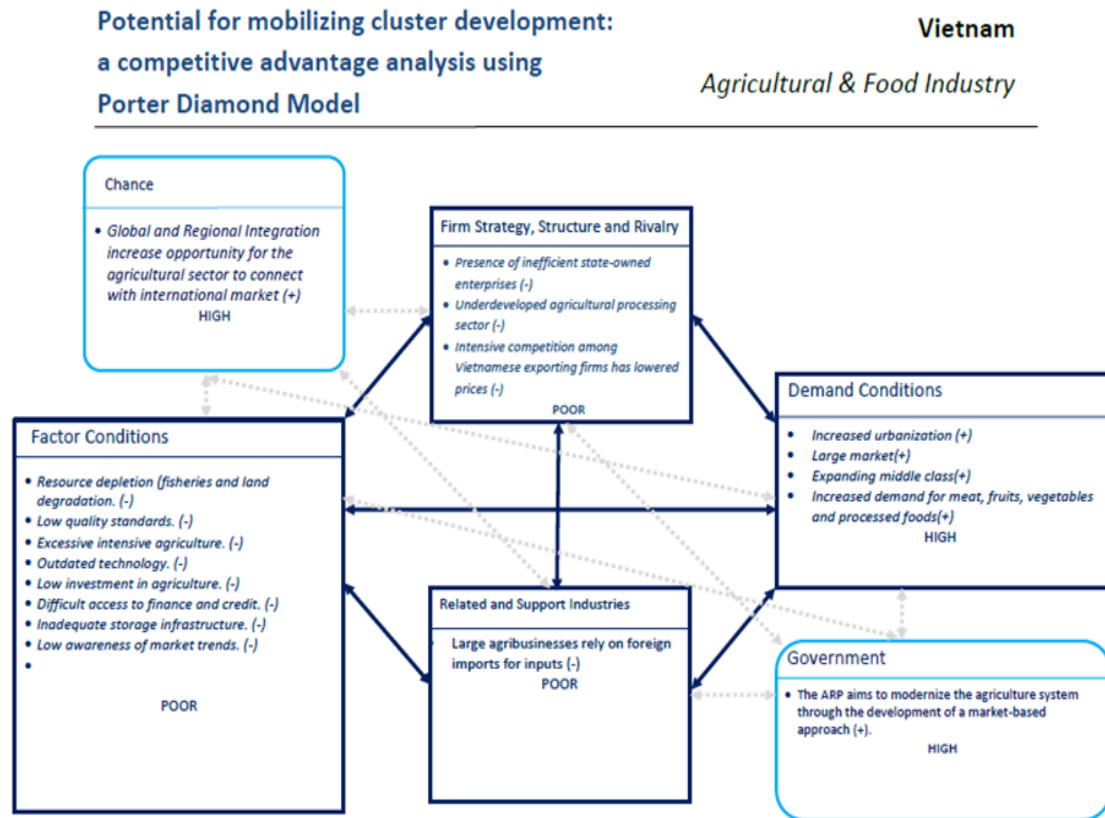
¹⁷⁶ Dinh, H. (2013). *Light Manufacturing in Vietnam Creating Jobs and Prosperity in a Middle-Income Economy* (Rep.). The World Bank.

¹⁷⁷ Dinh, H. (2013). *Light Manufacturing in Vietnam Creating Jobs and Prosperity in a Middle-Income Economy* (Rep.). The World Bank.

¹⁷⁸ Dinh, H. (2013). *Light Manufacturing in Vietnam Creating Jobs and Prosperity in a Middle-Income Economy* (Rep.). The World Bank.

¹⁷⁹ Dinh, H. (2013). *Light Manufacturing in Vietnam Creating Jobs and Prosperity in a Middle-Income Economy* (Rep.). The World Bank.

Figure 28: Potential for mobilizing cluster development (Vietnam)



Government Policy

The government of Vietnam introduced the Agriculture Restructuring Plan (ARP) in 2013.¹⁸⁰ The ARP aims to modernize the agriculture system through the development of a market-based approach. The government will transition from planner to facilitator with the aim of attracting more private sector investment, including foreign direct investment. Although the government hopes to achieve increased productivity within the sector, it includes efforts to support small-plot farmers in the ARP. Finally, green and sustainable development objectives undergird the ARP.

Vietnam's Law on Food Safety (FSL) is the key legislation for food standards. Three separate government ministries, the Ministry of Health, the Ministry of Agriculture and Rural Development, and the Ministry of Industry and Trade, are responsible for implementing the FSL, depending on the product.¹⁸¹ In 2014, the government issued Inter-Ministerial Circular 13/2014 that details the specific responsibilities of the three ministries for FSL implementation. Vietnam applies Codex guidelines unless stated otherwise.

¹⁸⁰ https://www.hungerexplained.org/Hungerexplained/ARP_Vietnam_files/ARP%20Vietnam.pdf

¹⁸¹ Pham, T. M., & Petlock, B. (2017). Food and Agricultural Import Regulations and Standards - Vietnam (Issue brief) (R. Hanson, Ed.). USDA.

Recommendations

- 1) **Diversify agricultural production** – As domestic demand changes in Vietnam, the agriculture sector should respond by increasing its production of dairy, meat, fruits, vegetables and processed foods. The transition will necessitate moving away from rice farming to more productive crops. Clustering could accelerate the transition.
- 2) **Improve food safety and standards** – The public and private sectors should work together to ensure that Vietnam's agribusiness sector produces safe foods that have the requisite standards to export to major markets. Clustering could enable closer communication among agribusinesses on standards as well as between businesses and government.

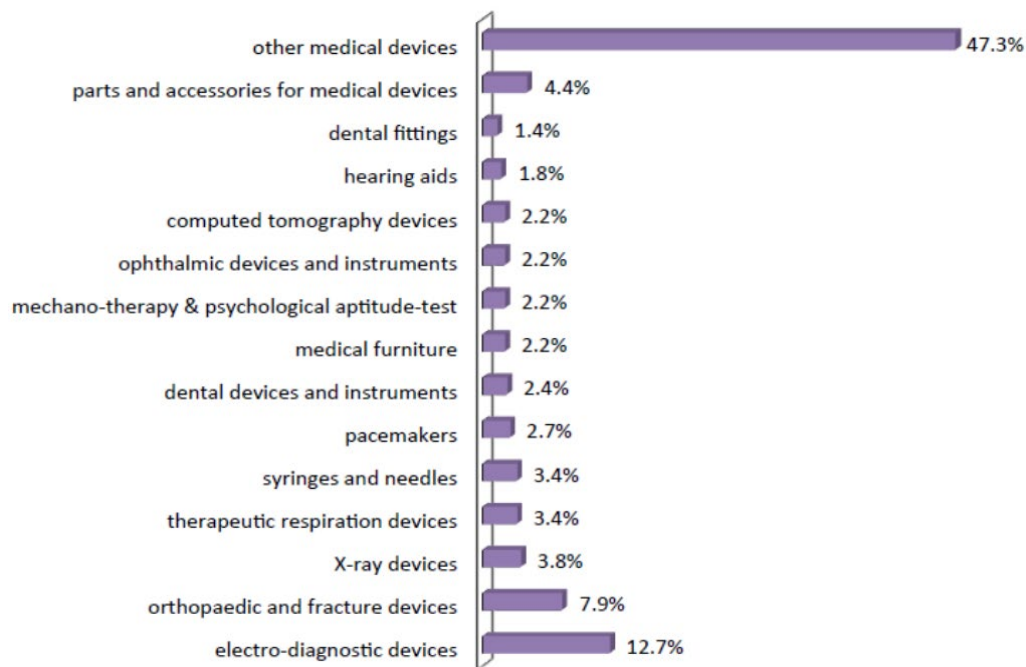
3. MEDICAL DEVICE INDUSTRY

3.1 INDUSTRY OVERVIEW

Medical devices have a very broad definition and there are variations in definition across different countries. According to the World Health Organization (WHO), medical devices refer to “any instrument, apparatus, implement, machine, appliance, implant, reagent for in vitro use, software, material or other similar or related article, intended by the manufacturer to be used, alone or in combination, for human beings, for...diagnosis, prevention, monitoring, treatment or alleviation of a disease” among several other purposes.¹⁸² Hence, the medical device industry is comprised of several smaller segments based on the type or purpose of the devices.

Some of the more common types of medical devices are orthopedic instruments, x-ray instruments, diagnostic apparatuses, syringes and needles, and dental devices. The industry is highly fragmented with no particular type of medical device dominating. Figure 29 below shows the global market share of the main types of medical devices and clearly illustrates the industry's fragmentation.

Figure 29: Medical device industry's key market segments



Source: Whitaker Institute for Innovation and Societal Change, Galway, Ireland, 2015.¹⁸³

With countries across the world facing aging populations that are increasingly health conscious and with governments spending more and placing ever greater importance on healthcare, the medical device industry is benefiting from several tailwinds that have allowed it to grow at a substantial rate over the past few years. Estimates of the current global market size for medical devices vary but

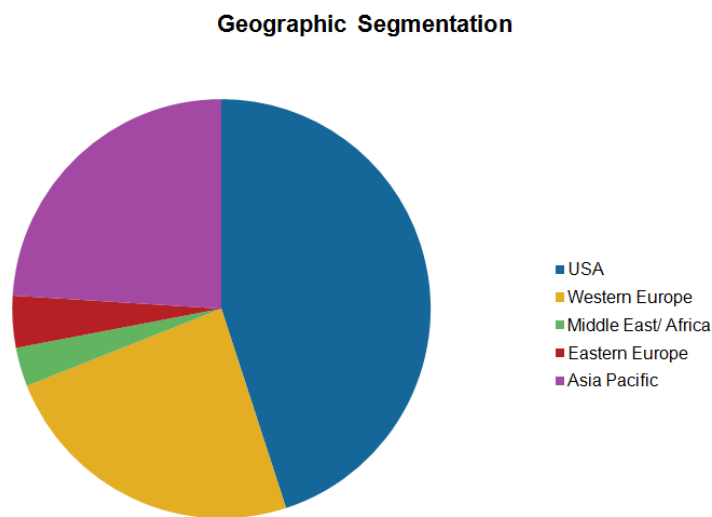
¹⁸² http://www.who.int/medical_devices/full_definition/en/

¹⁸³ <https://waa.inter.nstda.or.th/prs/pub/Final-Report-Medical-Device.pdf>

are mostly at around US\$400 billion.^{184, 185, 186} with a compound annual growth rate (CAGR) of just above 5 percent.¹⁸⁷ According to KPMG, the industry may grow to as much as US\$800 billion by 2030, making the potential within the industry unquestionably vast.

The United States and Western Europe have the largest medical device markets at approximately US\$135 billion¹⁸⁸ and US\$90 billion¹⁸⁹ respectively. Asia Pacific's market is just behind at around US\$80 billion. These three markets constitute around 90 percent of the global market as illustrated in Figure 29 below.

Figure 30: Geographic segmentation of global medical device industry



Source: Espicom, AMMI Analysis, 2013

The largest and most advanced medical device companies are comprised entirely of U.S. and Western European companies.¹⁹⁰ These companies export heavily and have manufacturing bases all over the world. This also makes the U.S. and Western Europe the principle exporters of medical devices, with many developing countries relying very heavily, if not entirely, on medical devices from these two regions. In 2016 alone, the U.S. exported US\$44 billion worth of medical devices,¹⁹¹ a figure multiple times larger than ASEAN's entire medical device market. Medical devices are in fact one of the U.S.' main exports. Although Asia-Pacific's medical device market is also large and fast-growing, its companies primarily produce low-end products and are still not exporting significantly to global markets. Nevertheless, this is beginning to change. Hence, the global value chain remains dominated by U.S. and Western European companies albeit with several emerging Asian companies lurking in the background.

¹⁸⁴ <http://www.lucintel.com/medical-device-market-2018.aspx>

¹⁸⁵ <https://www.statista.com/statistics/325809/worldwide-medical-technology-revenue/>

¹⁸⁶ <https://medicaldevicesasean.com/asean-market-overview/>

¹⁸⁷ <https://www.reportlinker.com/p02374321/Medical-Devices-Technologies-and-Global-Markets.html>

¹⁸⁸ <http://www.themadeinamericamovement.com/reshoring/u-s-medical-device-industry/>

¹⁸⁹ https://www.trade.gov/topmarkets/pdf/Medical_Devices_Executive_Summary.pdf

¹⁹⁰ <https://www.proclinical.com/blogs/2018-5/the-top-10-medical-device-companies-2018>

¹⁹¹ <https://www.exportcompliancematters.com/2016/06/14/2016-top-export-markets-u-s-goods/>

3.2 ASIAN LANDSCAPE

In Asia, Japan and China have the two largest medical device industries by some considerable distance. Japan's industry is the largest and the most advanced but has been growing at a sluggish pace and is likely to be overtaken by China's in the near future. In fact, China is projected to have the second largest medical device market by 2030 after the U.S.¹⁹² Although Japan's and China's medical device industries are well established, both countries still import the majority of their most sophisticated medical devices primarily from the U.S. and Western Europe.

Currently, around 80-90 percent of China's over 18,000 medical device manufacturers produce low-end products. More manufacturers, however, are expected to move towards higher-end products in the near future, mainly due to improving capabilities and extremely vigorous support and generous incentives from the government. Crucially, the Chinese government has prioritized advanced medical devices as one of the target industries under its ambitious "Made in China 2025" industrial plan.¹⁹³ It plans to have 70 percent of all medical devices used in the country to be produced locally by 2025 and 95 percent by 2030.¹⁹⁴ In addition, large Chinese technology giants are making forays into the medical device industry with Alibaba, Baidu, and Xiaomi all making investments in the field in recent years. China is encouraging, and in some cases requiring, hospitals to buy a certain percentage of their medical devices locally.¹⁹⁵ This means that it is likely that Chinese companies will be competing with their U.S. and Western European counterparts to become global leaders in the medical device industry in the foreseeable future.

Elsewhere among the leading Asian medical device markets, Indonesia and Thailand are projected to grow at the fastest rates at 15 percent and 12 percent per annum, respectively. These growth rates are multiple times above the global average of 5 percent and correspond to the significantly expanding pharmaceutical industry in Indonesia and the rapidly aging population in Thailand. With the exception of Japan, all of Asia's major medical device markets are expected to grow faster than the global mean due to factors such as growing middle classes, rising purchasing power, aging populations, and increased healthcare spending. Thus, Asia constitutes a large and attractive market for medical device companies to expand into.

Table 24: Medical device industry in Asia

Country	Medical Device Market Size	Projected Growth Rate
Japan	\$26 billion	1.4%
China	\$19 billion	7.5%
South Korea	\$5.5 billion	5.3%
India	\$3.5 billion	7.5%
Taiwan	\$2 billion	8%
Malaysia	\$1.5 billion	6.5%
Thailand	\$1 billion	12%
Hong Kong	\$0.62 billion	7.5%
Indonesia	\$0.67 billion	15%
Vietnam	\$0.78 billion	8%

¹⁹² <https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2017/12/medical-devices-2030.pdf>

¹⁹³ https://s3.eu-west-2.amazonaws.com/acuris-live/Medtech_Asia_Newsletter.pdf

¹⁹⁴ <https://www.medicalplasticsnews.com/news/ten-year-plan/>

¹⁹⁵ <https://www.ft.com/content/ea032bba-5f33-11e8-9334-2218e7146b04>

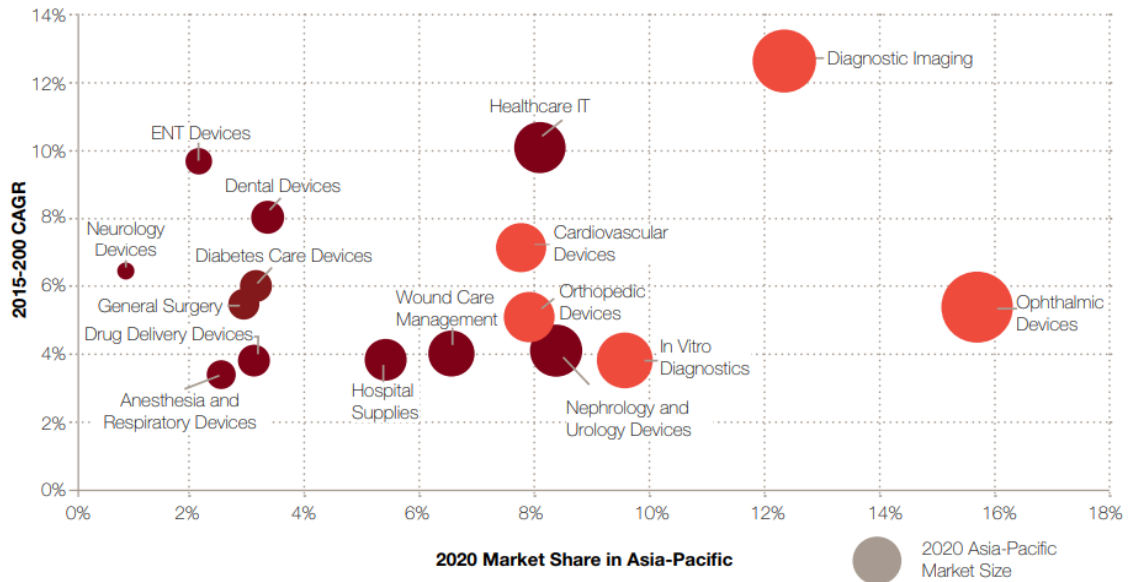
Country	Medical Device Market Size	Projected Growth Rate
Singapore	\$0.53 billion	8.5%
Philippines	\$0.3 billion	8.5%

Source: Pacific Bridge Medical

The largest medical device companies in Asia are concentrated in China and Japan. The largest Chinese medical device companies include Mindray and Shanghai United Imaging Healthcare, while the largest Japanese medical device companies include Terumo, NIPRO, Olympus Medical Systems, and Toshiba Medical Systems.¹⁹⁶

In terms of market segmentation, Figure 31 below shows the key medical device market segments along with Asia-Pacific's market share and 2015-2020 compound annual growth rate (CAGR) for each of the segments.¹⁹⁷ Asia-Pacific's market share in all of these segments is still relatively low, but they are all growing considerably. The region has a larger presence in diagnostic, cardiovascular, orthopedic, and ophthalmic devices. This corresponds with the increasing occurrence of non-communicable diseases such as cancer, cardiovascular diseases, and diabetes in the Asia-Pacific region. With non-communicable diseases becoming more prevalent, there is also an increased demand for health check-ups as well as diagnosis and screening tests.

Figure 31: Asia-Pacific's market share and CAGR in key medical device segments



Source: Global Data, 2018

¹⁹⁶ https://www.trade.gov/topmarkets/pdf/Medical_Devices_Japan.pdf

¹⁹⁷ Figure from <https://www.pwc.com/gx/en/growth-markets-centre/publications/assets/pwc-gmc-the-future-of-asean-time-to-act.pdf>

3.3 ASEAN LANDSCAPE

Currently valued at over US\$5 billion, ASEAN's medical device industry is projected to grow at an annual rate of around 9.7-11.2 percent in the coming years, well beyond the global average of around 5 percent, as illustrated in Table 25 below. At this rate, the industry could be worth over US\$8.5 billion by 2021. This corresponds with the fact that ASEAN is one of the most-rapidly aging regions in the world.¹⁹⁸ Moreover, the region's middle-class population and purchasing power are also expanding significantly, while the medical device industries in many ASEAN countries are still young with ample room for growth. Governments across ASEAN are also placing greater importance on the medical device industry as they are becoming increasingly aware of the large untapped market potential and health benefits of medical devices, especially for tackling the increasing prevalence of non-communicable diseases. ASEAN countries are also actively trying to harmonize their medical device regulatory schemes in order to facilitate the industry's growth.

Table 25: Medical device industry in ASEAN

Country	Medical Device Market Value	Projected Annual Growth Rate
Brunei Darussalam	N/A ¹⁹⁹	N/A
Cambodia	N/A	N/A
Indonesia	\$0.67 - \$0.85 billion	9.9% - 15%
Lao PDR	N/A	N/A
Malaysia	\$1.233 - \$1.5 billion	6.5% - 9.7%
Myanmar	N/A	N/A
The Philippines	\$0.3 - \$0.48 billion	8.5% - 9.3%
Singapore	\$0.53 - \$0.54 billion	8.5% - 12.3%
Thailand	\$1 - \$1.27 billion	9.2% - 12%
Vietnam	\$0.78 - \$0.98 billion	8% - 9.4%
ASEAN²⁰⁰	\$5.35 - \$5.7 billion	9.7% - 11%

Sources: Pacific Bridge Medical, PWC

Although ASEAN's medical device industry is clearly on the rise, there is a large discrepancy in the size and development of the industry in each ASEAN country. Countries such as Singapore, Thailand, and Malaysia are relatively established in this field but many others are still very primitive, with very little information and data available. This heterogeneity reflects the vast differences in socioeconomic development in the region and means that the opportunities and challenges facing each country are very different. Despite this, there are still several areas in which ASEAN governments can work together to help promote and facilitate the industry's growth.

ASEAN member states (AMSs) are currently in the process of strengthening and standardizing their medical device registration and regulation schemes to facilitate the growth of the industry. In 2015, all 10 AMSs signed the ASEAN Medical Device Directive (AMDD), which is meant to harmonize the regulations and registration process for medical devices across the region. The directive is extensive and covers a wide variety of issues such as medical device definition and classification system, documents required for registration, and post-registration regulations. As of

¹⁹⁸ http://www.miti.gov.my/miti/resources/fileupload/ASEAN_Population%20Forecast.pdf

¹⁹⁹ Information not available. Please note that information available on the medical device industry in Brunei Darussalam, Cambodia, Lao DPR, and Myanmar is extremely limited.

²⁰⁰ Total ASEAN numbers are higher than the sum of the numbers given for each country as estimated ASEAN market size and growth rate factor in the market sizes and growth rates of Brunei, Cambodia, Laos and Myanmar.

2018, none of the countries have fully integrated the guidelines set forth by the AMDD into their local laws; countries like Singapore and Malaysia are close to full integration, while others like Brunei, Cambodia, and Myanmar have barely begun.²⁰¹ Successful implementation of the AMDD is expected to be highly significant for the expansion of the medical device industry in the region by facilitating trade in medical devices for all ASEAN member countries. It is hoped that by 2020, all countries will have fully complied with the AMDD.²⁰²

3.4 GLOBAL VALUE CHAIN INTEGRATION

Although the medical device industry is growing rapidly and offers a plethora of business opportunities, it is difficult to take advantage of them. The medical device industry is highly sophisticated and technical by nature. This presents a significant barrier to entry for ASEAN SMEs. With the increasing proliferation of advanced medical devices coming in from leading U.S. and Western European companies, the landscape is also extremely competitive as the level of investment and expertise required is rising fast in the field.

ASEAN is largely an importing region for medical devices. Although there are a number of domestic medical device companies, the vast majority of them produce only low to medium-end devices or commoditized components of high-end medical devices while high-end devices are almost entirely imported.²⁰³ It is estimated that more than 90 percent of medical devices in ASEAN are imported.²⁰⁴ A greater influx of foreign medical products is also expected due to various government incentives to attract foreign medical device firms, an increasingly harmonized medical device registration system under the AMDD, and ASEAN's increasing adoption of international medical device standards. Imports currently come mainly from the U.S., Western Europe, China, and Japan. Over the next few years, China is expected to become a much more prominent exporter to the region and will be competing with established U.S. and Western European companies in penetrating the ASEAN market.

As for domestic ASEAN firms, they continually struggle to move up the value chain due to a myriad of factors. Funding is a major issue as the research and development necessary to produce high-end medical devices is very expensive. To be sustainable and competitive with their foreign counterparts, domestic firms may need to partner with some of these firms, seek private equity funding from local or international entities or seek government assistance. With several ASEAN governments offering a wide variety of incentives to attract leading medical device companies to set up manufacturing and R&D bases in their respective countries, a requirement on collaboration with domestic firms or technology transfer will be highly beneficial for developing domestic industries.

On the flip side, domestic firms also have some advantages over their foreign counterparts. ASEAN is a very diverse region with very unique cultures, customs, regulations, medical demand, and disease profiles. Domestic firms can leverage their greater insight and understanding of these issues to their advantage. Often times, this local insight can attract partnership with foreign companies that often need such information to gain an initial foothold in a new market.

There is also a vast and mostly untapped market for mid to high-end medical devices in ASEAN. Bar the wealthiest hospitals that can afford the best medical devices, there is a widespread demand for medical devices that are more advanced than those currently produced locally but not necessarily as advanced and expensive as those produced by multinational firms. Many of these

²⁰¹<http://www.qualtech.com.tw/en/about-qualtech/news1/1017-asean-medical-device-directive-implementation-current-progress-and-future-direction-may-2018.html>

²⁰² <https://www.pwc.com/gx/en/growth-markets-centre/publications/assets/pwc-gmc-the-future-of-asean-time-to-act.pdf>

²⁰³ https://s3.eu-west-2.amazonaws.com/acuris-live/Medtech_Asia_Newsletter.pdf

²⁰⁴ <https://www.pwc.com/gx/en/growth-markets-centre/publications/assets/pwc-gmc-the-future-of-asean-time-to-act.pdf>

top-line products have exclusive features that are rarely used. Thus, there is a demand for simplified, affordable, and localized versions of top-line foreign medical devices.²⁰⁵ Coupled with the benefits from lower logistics and labor costs, producing affordable and localized mid-end medical devices is a promising market entry strategy for domestic ASEAN firms.

Currently, the main medical devices exported from ASEAN are low-end equipment or components of more sophisticated devices. ASEAN are a major exporter of rubber equipment such as gloves and catheters. ASEAN nations also export a large number of syringes and needles.

3.5 STANDARD COMPLIANCE

There are several international standards concerning medical devices, including:

- 1) ISO 13485 (Medical devices – Quality management systems – Requirements for regulatory purposes)
- 2) ISO 14971 (Medical devices – Application of risk management to medical devices)
- 3) ISO 10993 (Biological evaluation of medical devices)
- 4) ISO 11607 (Packaging for terminally sterilized medical devices)
- 5) IEC 60601-1 (Electrical medical devices – General requirements for basic safety and essential performance)
- 6) IEC 62304 (Medical device software – Software life cycle processes)

ISO 13485 is harmonized with the more generic ISO 9001 and is more involved with systematic management than technical specifications. Similarly, ISO 14971 is also more about management. The other standards listed above are largely concerned with various technical specifications. There are also a large number of market-specific standards for medical devices, some of which are based on ISO and IEC standards and some of which are independently published.

The most commonly adopted global medical device standard is the comprehensive ISO 13485, which in its current iteration is the ISO 13485:2016.²⁰⁶ The ISO 13485:2016 was published in 2016 and replaces ISO 13485:2003, which was published in 2003. The main differences between the two versions include the new risk-based approach required in every step of the quality management system, the increased human capital requirements, an enhanced product feedback procedure, enhanced requirements for investigation and control of non-confirming products, and additional requirements for complaint handling and reporting to regulatory agencies. The ISO 13485:2016 applies not only to medical device manufacturers but also to companies that supply components of such devices.

The ISO recommends a three-year transition period from the ISO 13485:2003 to ISO 13485:2016 for manufacturers, regulators, national and international standards bodies, and other related parties.²⁰⁷ ISO 13485:2016 serves as the benchmark for medical device regulations in several leading markets including the U.S. and the European Union. As the previous iteration of the standard was widely adopted in various markets worldwide, it is expected that adoption of the 2016 standard will increase in the near future given the recommended three-year transition period by the ISO.²⁰⁸

²⁰⁵ <https://www.pwc.com/gx/en/growth-markets-centre/publications/assets/pwc-gmc-the-future-of-asean-time-to-act.pdf>

²⁰⁶ <https://www.iso.org/standard/59752.html>

²⁰⁷ https://mail.tuv-sud.com/public/a_14616_VCJTI/file/data/294_tuv-sud-mhs-revision-iso13485.pdf

²⁰⁸ https://www.iso.org/files/live/sites/isoorg/files/standards/docs/en/white_paper_-_iso_transition_planning_guidance_for_iso_13485-2016.pdf

In ASEAN, information on the adoption of ISO 13485:2016 is limited. The ASEAN Medical Device Directive (AMDD) is based in part on ISO 13485:2003, but as the AMDD was signed in 2015,²⁰⁹ it remains to be seen if the agreement will be updated to incorporate the new requirements contained in ISO 13485:2016. An exception is Singapore, where the Singapore Standards Council has published SS ISO 13485:2016, which is an identical adoption of its ISO counterpart.²¹⁰

There is, however, much more information regarding the adoption of ISO 13485:2003 and other international standards related to medical devices. As a highly regulated industry, international standards are widely adopted for medical device registration in the region. The AMDD in fact mandates that all medical devices in the region must either comply with the standards recognized by the ASEAN Medical Device Committee (AMDC) or the standards recognized by the relevant national regulatory body.²¹¹

In practice, ASEAN countries generally adhere to either the international medical device standards, the ISO 13485 in particular, or an equivalent local standard. For example, in Thailand, the Thai Industrial Standards Institute (TISI) has published nearly 150 standards for different kinds of medical devices. Most of these standards are based on those published by the ISO.²¹² Malaysia requires all medical device manufacturers to be certified with ISO 13485 or an equivalent quality management system certificate.²¹³ Indonesia requires ISO 13485 compliance as a prerequisite for registering medical devices in the country.²¹⁴ In Singapore, all manufacturer, importer, and wholesaler license holders must be certified with ISO 13485 or an equivalent standard.²¹⁵ In short, incorporating ISO 13485 to a country's regulatory scheme is considered essential for a country to participate in global medical device markets and to ensure the safety of end-users.

According to the annual global survey conducted by the ISO, the number of ISO 13485 certificates in ASEAN has steadily increased in the past few years. As of December 31st 2017, the number of existing and valid ISO 13485 certificates in each ASEAN country are as follows:

- 1) Cambodia – 4 certificates
- 2) Indonesia – 36 certificates
- 3) Malaysia – 410 certificates
- 4) Myanmar – 2 certificates
- 5) The Philippines – 23 certificates
- 6) Singapore – 243 certificates
- 7) Thailand – 166 certificates
- 8) Vietnam – 55 certificates

These eight countries are together responsible for 939 ISO 13485 certificates, constituting around 3 percent of the world's total. Only Lao DPR and Brunei Darussalam do not have an existing valid ISO 13485 certificate, although Lao DPR has a total of 31 valid ISO 9001 certificates while Brunei Darussalam has a total of 109 valid ISO 9001 certificates.²¹⁶ As mentioned earlier, the ISO 13485 and ISO 9001 share several similar characteristics with the ISO 13485 more tailored towards medical devices. It is unclear however how many of the ISO 9001 certificates in Lao DPR and Brunei Darussalam belong to medical device companies.

²⁰⁹ <http://atr.asean.org/standards/detail/109/medical-devices-quality-management-systems-requirements-for-regulatory-purposes>

²¹⁰ <https://www.singaporestandardseshop.sg/product/product.aspx?id=4293fba9-878b-498d-879b-e0fb608410ff>

²¹¹ <http://asean.org/storage/2016/06/22.-September-2015-ASEAN-Medical-Device-Directive.pdf>

²¹² <http://www.bangkokbiznews.com/pr/detail/21769> (in Thai)

²¹³ <https://www.tuv-sud.com/uploads/images/1445964830732222650523/malaysia-medical-device-regulations.pdf>

²¹⁴ http://www.eibn.org/upload/EIBN_Indonesia_Medical_Device_regulation.pdf

²¹⁵ <https://www.andamanmed.com/singapore/>

²¹⁶ ISO 2017 surveys, available at <https://www.iso.org/the-iso-survey.html>

3.6 ASEAN MEMBER STATES

Brunei Darussalam

Oil-rich Brunei is the smallest country in ASEAN, but also the second richest by GDP per capita after Singapore. Classified as a developed country, Brunei offers free and modern healthcare to all of its citizens and has one of the region's most developed healthcare systems.²¹⁷ Although the country can cover basic care, for more complicated or specialized care, the government generally sends patients to Singapore on fully-funded trips.²¹⁸

Despite this, there is surprisingly very little information on the country's medical device industry. From the limited information available, it is known that x-ray apparatus, electro medial apparatus and thermometers are the leading medical devices in Brunei.²¹⁹ The Department of Healthcare Technology under the Ministry of Health is the government body in charge of regulating Brunei's medical device industry.

With such minimal information available on the country's medical device industry, it is not possible to conduct a proper Porter's Diamond Model analysis to determine the possibility for cluster mobilization.

Cambodia

Cambodia is the least affluent country in ASEAN based on GDP per capita and has a relatively primitive healthcare industry consisting of public healthcare providers, private healthcare providers, and medical institutions run by NGOs and non-profits. Although private providers are of higher quality, the industry as a whole still lacks adequate resources. Thus, high-income Cambodians routinely seek healthcare in nearby countries like Vietnam, Thailand, and Singapore.²²⁰ In recent years, there have been more foreign healthcare providers entering the country.

There is no reliable number on the size of the medical device industry in Cambodia. According to the World Health Organization (WHO), there were only 21 high-end medical devices in the entire country in 2012²²¹ as opposed to 779 in Thailand.²²² Although there is much room for growth, the purchasing power of Cambodians is low and foreign companies looking to invest in Cambodia may need to find a reliable local partner to help navigate through a complex bureaucracy mired in a lack of transparency and rampant corruption. Despite this, companies from the U.S., Japan, Europe, and China have already entered the Cambodian market. Medical devices with the best prospects in Cambodia are diagnostic devices, ultrasounds machines, X-ray machines and TC scanners.²²³

With such minimal information available on the country's medical device industry, it is not possible to conduct a proper Porter's Diamond Model analysis on cluster mobilization.

²¹⁷ <http://www.who.int/healthinfo/paper30.pdf>

²¹⁸ <https://www.export.gov/article?id=Brunei-Health>

²¹⁹ <https://www.export.gov/article?id=Brunei-Health>

²²⁰ <http://www.pharmed-expo.com/cambodia/news/healthcare-resource-guide-cambodia-1-25.html>

²²¹ http://www.who.int/medical_devices/countries/khm.pdf

²²² http://www.who.int/medical_devices/countries/tha.pdf?ua=1

²²³ <http://www.pharmed-expo.com/cambodia/news/healthcare-resource-guide-cambodia-1-25.html>

Indonesia

With the region's largest population, Indonesia offers a potential market size unmatched by any other ASEAN country. The country's healthcare industry has traditionally been small compared to the population, but it is expected to grow rapidly under a universal healthcare scheme that commenced in 2014. The goal is to provide every Indonesian, currently at almost 270 million, with at least basic coverage by 2019. When achieved, the system will become the world's largest single payer healthcare system.²²⁴ Accordingly, the healthcare industry is expected to expand by around 11.7 percent annually, one of the fastest in the world.²²⁵

With a booming healthcare budget, Indonesia unsurprisingly has the fastest-growing and one of the largest medical device markets in ASEAN. The country's medical device market size is around US\$0.67 – US\$0.85 billion with a projected annual growth rate of up to 15 percent in the next few years. Despite this, the domestic medical device industry is rather underdeveloped, with about 97 percent of medical devices imported. Local producers are very primitive and produce only low-end devices such as surgical gloves, bandages, orthopedic aids, and hospital furniture. Over half of the medical device market in Indonesia is comprised of 35 percent diagnostic imaging products and 23.8 percent medical consumable products, while the rest of the market is fragmented.²²⁶

Recognizing the potential of the medical device industry, Indonesia's Ministry of Industry is currently embarking on an ambitious 2015-2035 Medical Industry Development plan as well as relaxing certain regulations to attract foreign investments in the industry.²²⁷ Accordingly, in 2017, direct investment in the industry increased by seven-fold and there are now 242 medical device companies in Indonesia.²²⁸

Penetrating Indonesia's medical device market comes with several unique challenges. One of them is logistics, as navigating around a country that is comprised of over 17,000 separate islands can be extremely complicated. Moreover, unlike elsewhere in ASEAN, medical device licenses may only be held in the name of local distributors, which makes it very difficult for foreign firms to end associations with an underperforming local distributor. Working with Indonesia's bureaucracy can also be a long and complex task and medical equipment registration often takes a significant amount of time.

The figure 32 illustrates a Porter's Diamond Model analysis for cluster mobilization in Indonesia's medical device industry.

²²⁴ <https://www.csmonitor.com/World/Asia-Pacific/2014/0310/Indonesia-launches-world-s-largest-health-insurance-system>

²²⁵ <https://healthcareasiamagazine.com/healthcare/news/indonesias-healthcare-spending-balloon-to471b-2022>

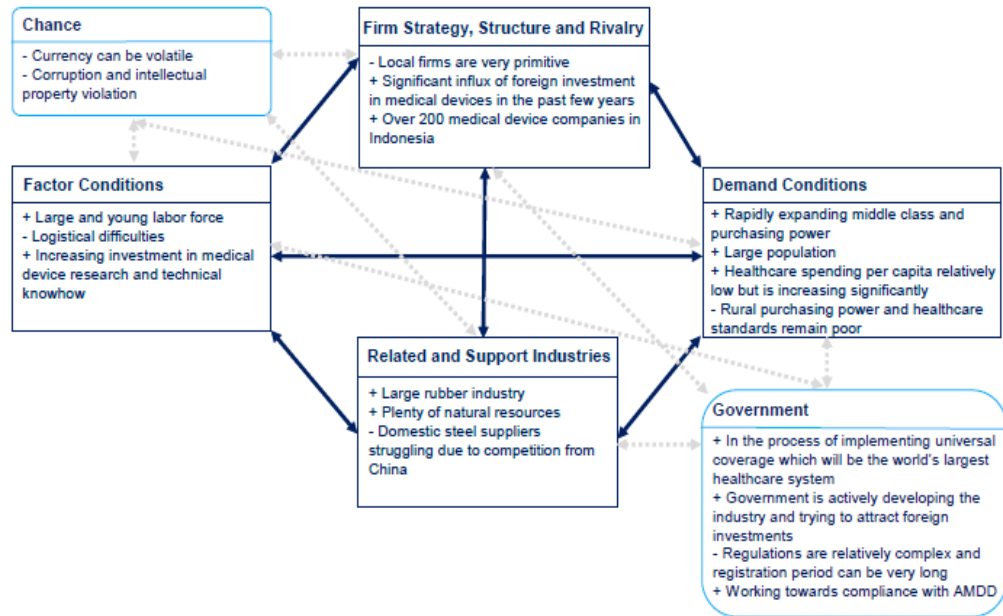
²²⁶ <http://www.qualtech.com.tw/en/about-qualtech/news/1/945-indonesia-medical-device-market-overview-and-importation-process.html>

²²⁷ <https://www.eibd-conference.com/assets/files/EIBD%202016/Sectoral/Healthcare%20%28Pharmaceutical%20-%20Medical%20Technology%29/KSP%20-%20Chrisma%20Albandjar.pdf>

²²⁸ <https://www.indonesia-investments.com/business/business-columns/strong-investment-growth-in-indonesia-s-medical-device-industry/item8675>

Figure 32: Potential for mobilizing cluster development (Indonesia)

Indonesia's Medical Device Industry



Lao PDR

Despite the significant improvements of late, Laos PDR still has a very rudimentary healthcare system with problems in health financing, infrastructure, management, and record keeping. The country has several healthcare schemes and has plans to achieve universal coverage by 2025, but only around 20 percent of the population is currently covered because a vast majority live in the countryside and are thus difficult to integrate into the system.²²⁹

Hospitals in Laos PDR, particularly local hospitals, suffer from a lack of personnel and inadequate medical devices. Only basic care is provided in the country and wealthier individuals usually travel to neighboring Thailand for more advanced care. There is very limited information regarding the country's medical device industry, but there is currently a large demand for affordable medical devices.²³⁰

The Food and Drug Department under the Ministry of Health is the government agency responsible for regulating medical devices. Laos PDR passed a law in 2012 which adjusted the medical device registration and classification systems to be in line with the AMDD.²³¹

With such minimal information available on the country's medical device industry, it is not possible to conduct a proper Porter Diamond Model analysis.

²²⁹ <https://www.pacificbridgemedical.com/publication/healthcare-in-laos/>

²³⁰ <https://www.export.gov/article?id=Laos-Pharmaceuticals-and-Medical-Supplies-and-Medical-Equipment>

²³¹ <https://www.pacificbridgemedical.com/publication/healthcare-in-laos/>

Malaysia

Malaysia may only have 30 million people, but it is one of ASEAN's richest countries and its per-capita healthcare expenditure is relatively high at nearly US\$400. It also has the largest medical device market in ASEAN at around US\$1.233-US\$1.5 billion with a healthy projected compound annual growth rate of 6.5-9.7 percent.

Malaysia currently has more than 200 medical device manufacturers, most of which are small companies producing low-end medical devices, particularly those that are made of rubber.²³² The country is the world's largest producer and exporter of catheters and surgical and examination gloves.²³³ In fact, around 60 percent of rubber gloves and 80 percent of catheters in the world are produced in Malaysia.

There are currently over 30 multinational medical device companies in Malaysia, producing primarily advanced medical devices. These include household names like B. Braun, Toshiba, and Taleflex Medical. Many of these companies choose to have manufacturing bases in Malaysia in order to take advantage of the country's relatively cheap but skilled labor force.²³⁴ The government also provides a range of generous investment incentives to attract multinational companies.

In recent years, the Malaysian government has placed great importance to the medical device industry. It has been identified by the government as one of the high potential growth sectors under the 11th Malaysia Plan. The government is targeting the development of high-value products such as electro medical equipment, cardiovascular devices, in vitro diagnostic products, and 3D-printed devices.²³⁵ Malaysia passed its first comprehensive medical device regulations in 2012, which established the Medical Device Authority as the regulating body for the industry. Medical devices manufactured, imported, and sold in the country now have to be registered and approved through the new Malaysian Medical Device Centralized Application System.

The figure 33 illustrates a Porter's Diamond Model analysis for cluster mobilization in Malaysia's medical device industry.

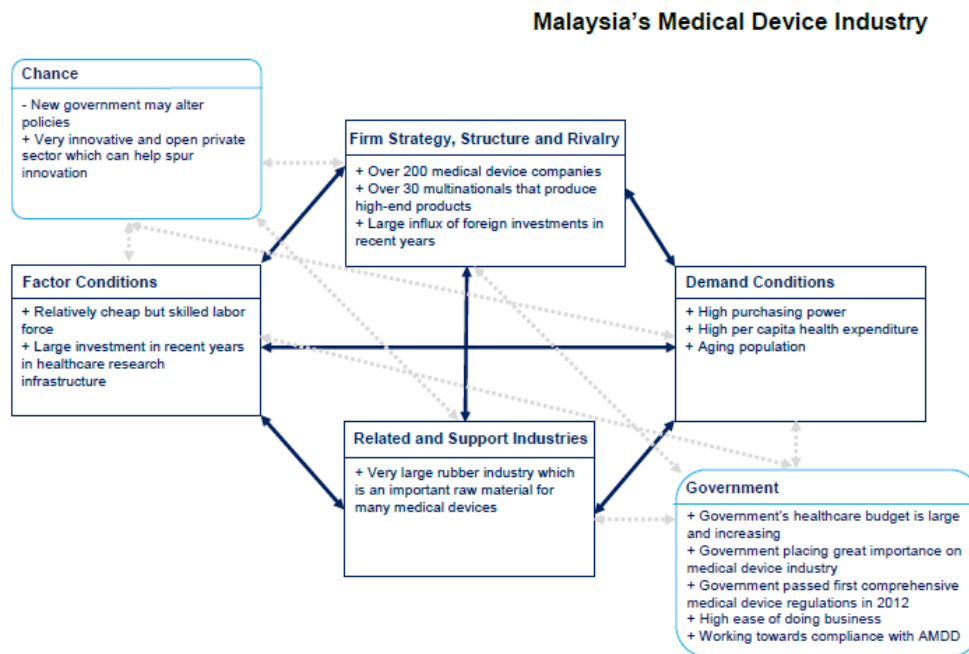
²³² http://www.miti.gov.my/miti/resources/12._Medical_Devices_Industry_.pdf

²³³ <https://www.pwc.com/gx/en/growth-markets-centre/publications/assets/pwc-gmc-the-future-of-asean-time-to-act.pdf>

²³⁴ <https://waa.inter.nstda.or.th/prs/pub/Final-Report-Medical-Device.pdf>

²³⁵ http://www.miti.gov.my/miti/resources/12._Medical_Devices_Industry_.pdf

Figure 33: Potential for mobilizing cluster development (Malaysia)



Myanmar

Myanmar has one of ASEAN's most primitive healthcare systems. During the five decades of military rule from 1962-2011, the government spent an extremely small amount of money on healthcare while routinely spent nearly half of the entire government budget on the military.²³⁶ As a result, the healthcare sector was chronically neglected. Although healthcare spending has increased since, the country still struggles with basic health issues like tuberculosis and other communicable diseases.²³⁷ There is also a severe lack of qualified health professionals and modern medical equipment throughout the country.

There is little information available on the country's medical device industry. There are some positive developments, however. As mentioned earlier, the government is gradually increasing the country's healthcare expenditure and is aiming to spend around 6 percent of the government's budget on healthcare by 2020.²³⁸ The country is also opening up to foreign investments and companies from India, Bangladesh, China, Indonesia, Pakistan, Thailand, and Vietnam already have a presence in the country. Meanwhile, Western companies are also expected to play a bigger role as the Burmese government is warming long-frozen ties with the West. GE Healthcare, Medtronic, and Johnson & Johnson are all currently operating in Myanmar. Moreover, the country's

²³⁶ https://www.berkeley.edu/news/media/releases/2007/06/28_Burma.shtml

²³⁷ <https://www.forbes.com/sites/benjaminshobert/2013/08/19/healthcare-in-myanmar/>

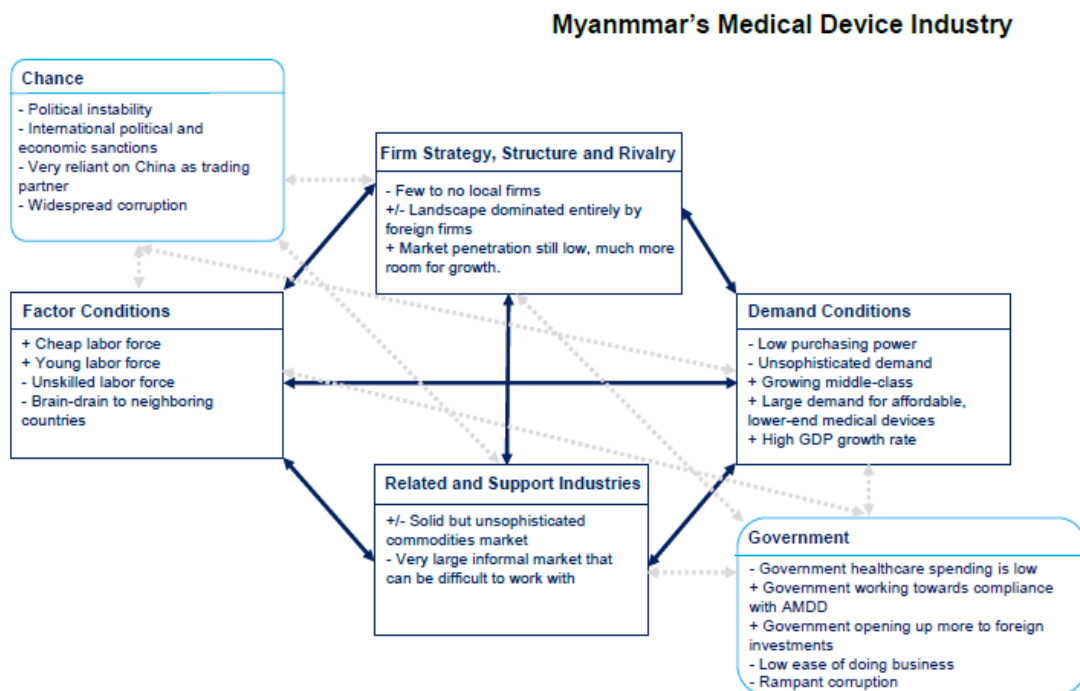
²³⁸ <https://www.pacificbridgemedical.com/publication/myanmars-medtech-on-the-rise-as-market-opens/>

Food and Drug Administration, which regulates medical devices, is drafting a new law to enhance the medical device registration and regulation schemes to comply with the AMDD.²³⁹

Myanmar's medical device industry is dominated almost entirely by foreign companies. Myanmar allows 100 percent foreign ownership of companies and also provides various tax incentives. This can make it difficult to local players to compete. Local products are mainly limited to the black market.²⁴⁰

The figure below illustrates a Porter's Diamond Model analysis for cluster mobilization in Myanmar's medical device industry.

Figure 34: Potential for mobilizing cluster development (Myanmar)



Philippines

Although the country is home to over 100 million people, its per-capita healthcare expenditure is relatively small. As such, its medical device market is worth only around US\$300 – US\$478 million but is expected to grow quite substantially at a compound annual growth rate 8.5-9.3 percent. Although it is expanding, the Philippines' medical device industry is still underdeveloped. Only 2 percent of the country's medical devices are produced locally, almost all of which are low-end devices, with about 98 percent imported. Imported devices come primarily from the U.S., China,

²³⁹ <https://www.pacificbridgemedical.com/publication/myanmars-medtech-on-the-rise-as-market-opens/>

²⁴⁰ <http://www.som.siu.ac.th/wp-content/uploads/2014/09/Marketing-Strategies-for-Medical-Devices-Market-in-Myanmar.pdf>

Germany, Singapore, and South Korea. The government currently offers a wide variety of incentives for investment in the healthcare sector in the country.²⁴¹

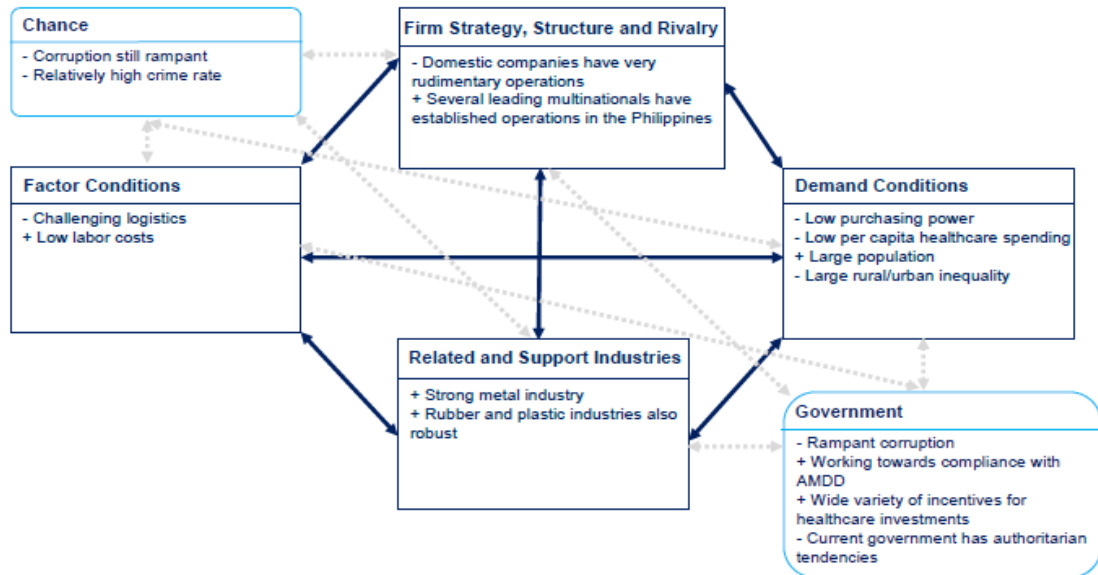
Around 36 percent of the Philippines' medical device market is comprised of diagnostic imaging products, around 22 percent is comprised of medical consumables, around 9 percent is comprised of auxiliary devices, and around 8.5 percent is comprised of dental products while the rest of the market is fragmented among a wide variety of products.²⁴²

The Philippines Food and Drug Administration's Center of Device Regulation, Radiation Health, and Research is the government body in charge of regulating medical devices and requires all imported medical devices to be registered. Similar to Indonesia, the Philippines is an archipelago country comprised of over 7,000 islands, which makes logistics and distribution very challenging for companies. There is also a large urban-rural divide in terms of income and quality of healthcare. In general, only large hospitals in affluent urban areas can afford high-end medical devices.²⁴³ Although the country has a universal healthcare scheme, only around 85 percent of Filipinos are covered by health insurance.

The figure below illustrates a Porter's Diamond Model analysis for cluster mobilization in the Philippines' medical device industry.

Figure 35: Potential for mobilizing cluster development (the Philippines)

The Philippines' Medical Device Industry



²⁴¹ <http://invest.cfo.gov.ph/pdf/part1/investment-in-health-and-wellness-services.pdf>

²⁴² <http://philmedical.com/post/14/industry-facts.html>

²⁴³ <http://www.asiahealthcaremarketresearch.com/philippines.html>

Singapore

Singapore is ASEAN's most advanced economy and also has the region's most advanced healthcare system²⁴⁴ and medical device industry.²⁴⁵ Although the population is small, it has the largest healthcare spending per capita in the region, making its healthcare expenditure comparable to that of much larger countries. Almost every Singaporean is covered by an insurance scheme and the country serves as an important medical hub in the region. Unsurprisingly, its medical device market is also large compared to its population at about US\$530 – US\$539 million with a projected annual growth rate of 8.5-12.3 percent.

Singapore is actively supporting the growth of local medical technology startups through various programs and incentives. As a result, its domestic medical device firms, while still mostly small, are among the most advanced in ASEAN. At the same time, foreign companies also see the city-state as an attractive manufacturing and R&D base with its strong research infrastructure, world-class research universities, strong intellectual property protections, a highly-skilled labor force, and various tax incentives. Additionally, given its strategic location, the city-state also serves as a popular regional transshipment hub for several foreign medical device companies and is emerging as a regional hub for medical devices. Currently, more than 30 global medical technology companies have established operations in the country.²⁴⁶

Singapore's medical device registration and regulatory systems are advanced. The Health Sciences Authority is the government body in charge of regulating medical devices. Its registration and regulating systems are aligned with the AMDD. If a device has already been approved by other international regulatory agencies, it could qualify for expedited registration in Singapore. The city-state is famed for being one of the most convenient places to do business in the world.²⁴⁷

The figure below illustrates a Porter's Diamond Model analysis for cluster mobilization in Singapore's medical device industry.

²⁴⁴ <http://www.who.int/healthinfo/paper30.pdf>

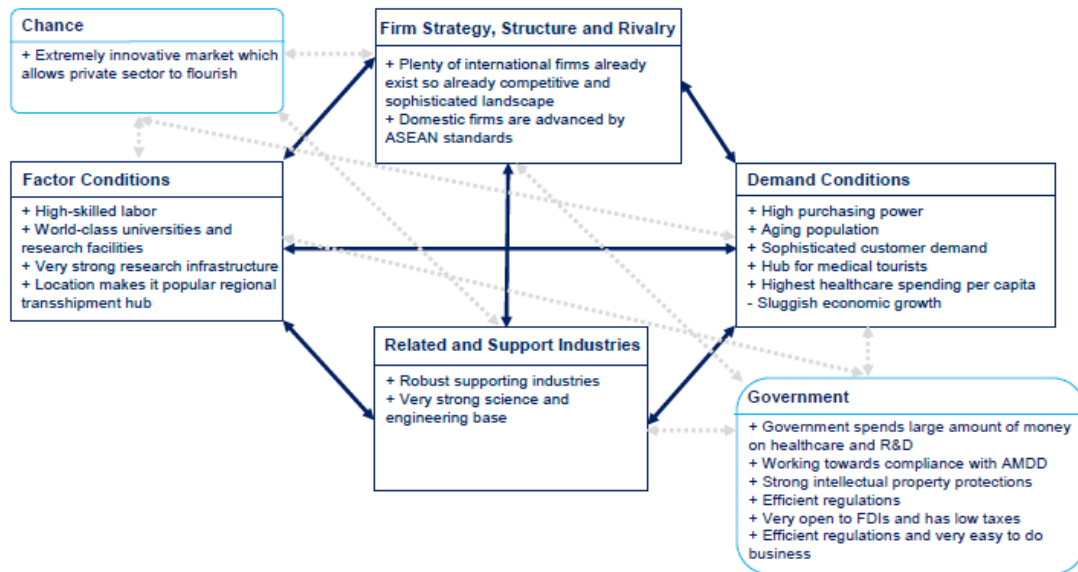
²⁴⁵ <https://ibc-static.broad.msu.edu/sites/globaledge/medc/industry-mpi/pdfs/medical-devices-MPI-Insights-and-Rankings-2017.pdf>

²⁴⁶ <https://www.pwc.com/gx/en/growth-markets-centre/publications/assets/pwc-gmc-the-future-of-asean-time-to-act.pdf>

²⁴⁷ <http://www.doingbusiness.org/rankings>

Figure 36: Potential for mobilizing cluster development (Singapore)

Singapore's Medical Device Industry



Thailand

Thailand has long had a large and robust healthcare industry with renowned hospitals and a universal healthcare scheme that has been in place for over a decade. With the country also aging fast and serving as a regional medical hub, Thailand's medical device industry is expected to expand at a rapid pace in the next few years. Millions of medical tourists, particularly from the Middle East, continue to visit Thailand each year and the flow shows no sign of slowing down. In addition, as the healthcare systems in neighboring countries are developing, the demand for Thai medical devices is likely to increase as well. The Thai government is vigorously promoting the industry, most recently making it a core component of Medical Hub, one of the new S-Curve industries, and offering a wide range of investment incentives for investment projects on medical devices in industrially strategic areas throughout the country, particularly in the Eastern Economic Corridor (EEC).²⁴⁸ It is hoped that Thailand will become the main exporting hub for medical devices to CLMV²⁴⁹ countries in the near future.²⁵⁰ Thailand's medical device market size is currently around US\$1 – US\$1.266 billion with a projected annual growth rate of 9.2-12 percent.

In 2016, there were a total of 131 medical device companies in Thailand. Most are SMEs located within the Bangkok Metropolitan Area that focus on producing low-end medical devices such as syringes, catheters, and medical needles and medium-end devices such as x-ray machines.²⁵¹ There are also several leading medical device companies that have manufacturing bases in

²⁴⁸ The EEC is comprised of Chacheongsao, Chonburi, and Rayong provinces

²⁴⁹ Cambodia, Lao DPR, Myanmar, Vietnam

²⁵⁰ https://www.krungsri.com/bank/getmedia/81b25df0-def8-47f8-954d1821652916d4/IO_Medical_Devices_2018_EN.aspx

²⁵¹ <https://waa.inter.nstda.or.th/prs/pub/Final-Report-Medical-Device.pdf>

Thailand where they take advantage of lower labor costs to produce elementary medical devices to either export back home or sell in the Thai market. The 10 largest medical device manufacturers in Thailand are all foreign companies or subsidiaries of foreign companies as illustrated in the table below.²⁵²

Table 26: The largest medical device manufacturers in Thailand

Company	Major Shareholders	2016 Revenue (US\$ Million)
Nipro (Thailand)	Japanese	228.09
Hoya Optics (Thailand)	Dutch	202.27
Kawasumi Laboratories (Thailand)	Japanese	75.86
Reckitt Benckiser Healthcare Manufacturing (Thailand)	Thai	61.18
Meditop	Thai	46.89
GE Medical Systems (Thailand)	US	45.26
Eyebiz Laboratory (Thailand)	Australian	41.5
Emerald Nonwovens International	Chinese	38.95
Infus Medical (Thailand)	Thai	27.38

Source: Business Online, compiled by Krungsri Research

Thailand exports primarily low-end medical devices. According to Krungsri Research, 84 percent of Thailand's medical device exports in 2016 were single-use items such as disposable rubber gloves, syringes and hypodermic needles while only 16 percent were durable items such as hospital beds, examination tables, and wheelchairs.²⁵³

With high-end medical devices, they are almost entirely imported which results in a huge medical device trade deficit. In 2015, a total of US\$3.7 billion worth of medical devices were imported to Thailand compared to just US\$550 million that was exported from the country. Imported devices are mostly from Japan, U.S., and Germany and tend to be expensive. Thailand's main medical device imports are ultrasonic scanning apparatus, cone beam computed tomography scanners, and electromagnetic radiation machines.²⁵⁴

There is a large demand for cheaper high-end medical devices that domestic companies can attempt to meet, but they may have to do so by partnering with the foreign companies that are expected to arrive as a result of the various government incentives. Alternatively, Thai companies may also attempt to produce the high-end devices on their own but will have to significantly upgrade their technological capabilities to do so.

In recent years, there have been research and development efforts towards producing high-end medical devices in Thailand. These efforts have been initiated by a variety of private, public, and academic entities. National research centers such as the National Metal and Materials Technology Center (MTEC) and the National Electronics and Computer Technology Center (NECTEC) are spearheading the government's efforts in this area. Nevertheless, commercialization of such research efforts has proved to be extremely difficult due to several factors, including a lack of trust

²⁵²https://www.krungsri.com/bank/getmedia/81b25df0-def8-47f8-954d1821652916d4/IO_Medical_Devices_2018_EN.aspx

²⁵³https://www.krungsri.com/bank/getmedia/81b25df0-def8-47f8-954d1821652916d4/IO_Medical_Devices_2018_EN.aspx

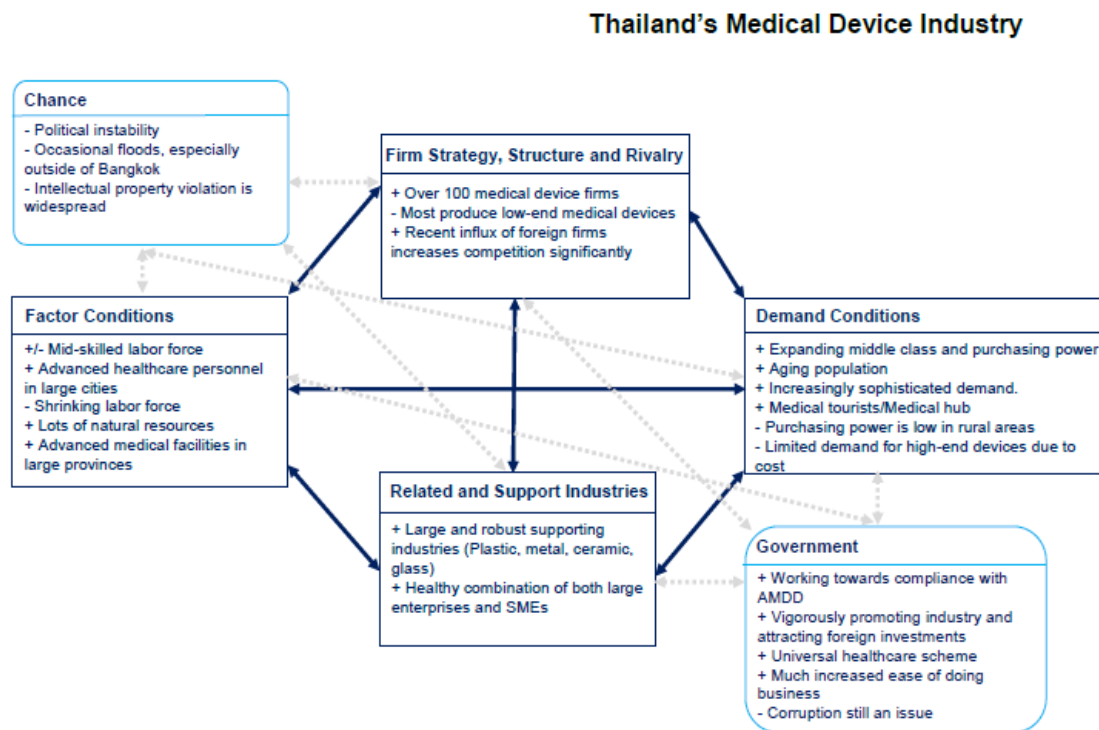
²⁵⁴ https://www.scbeic.com/en/detail/file/product/2731/eio8rkxw7i/Note_EN_plasticformmedical_20160922.pdf

in local products, inadequate product and manufacturing standards, and a lack of after-sale services.²⁵⁵

The growth of the medical device industry will have several implications for related and supporting sectors. Medical devices are produced from a variety of raw materials such as metals, ceramic, glass, and plastics. Plastic is an increasingly popular raw material for medical devices with its usage in the industry expected to grow at about 7 percent annually, while usage of other raw materials is expected to grow by only 1-2 percent annually.²⁵⁶ This is because plastics are cheap compared to other raw materials and is highly durable and malleable, making them ideal for medical devices. As medical devices provide much more value-added than most other plastic products, this is expected to be significantly beneficial for the plastic industry.

The figure below illustrates a Porter's Diamond Model analysis for cluster mobilization in Thailand's medical device industry.

Figure 37: Potential for mobilizing cluster development (Thailand)



²⁵⁵ <https://waa.inter.nstda.or.th/prs/pub/Final-Report-Medical-Device.pdf>

²⁵⁶ https://www.scbeic.com/en/detail/file/product/2731/eio8rkxw7i/Note_EN_plasticformedical_20160922.pdf

Vietnam

Vietnam's healthcare industry is rapidly expanding as an increasing number of Vietnamese are being covered under the government's universal healthcare scheme. The industry is also receiving significant government investment and benefiting from the burgeoning middle class and a fast-aging population. The government is increasing funding for state healthcare providers while the private healthcare sector has been expanding consistently since it was liberalized in 1989 as part of the free-market Doi Moi reforms.²⁵⁷

Vietnam's medical device market is estimated to be around US\$780 – US\$981 million in size with a projected annual growth rate of around 8 - 9.4 percent. The market can be broken down to around 25 percent consumables, around 23 percent diagnostic imaging, and around 15 percent patient aids while the rest of the market is relatively fragmented.²⁵⁸

Over 90 percent of medical devices in Vietnam are imported with local firms producing rudimentary products such as plastic gloves, bandages, compresses, syringes, and masks. Top sources of medical device imports into Vietnam are China, Germany, Japan and the U.S.^{259,260} In recent years, several multinational firms have established manufacturing bases in Vietnam to take advantage of the large market potential and the large and affordable labor force. Around 70 percent of all medical device purchases are made by government-funded medical facilities.

The Department of Medical Equipment and Health Works, an agency under the Vietnamese Ministry of Health, is the government body regulating medical devices. Starting in 2017, all local and imported medical devices have to be registered with the government.

The figure 38 illustrates a Porter Diamond Model analysis for cluster mobilization in Vietnam's medical device industry.

²⁵⁷ http://factsanddetails.com/southeast-asia/Vietnam/sub5_9g/entry-3470.html

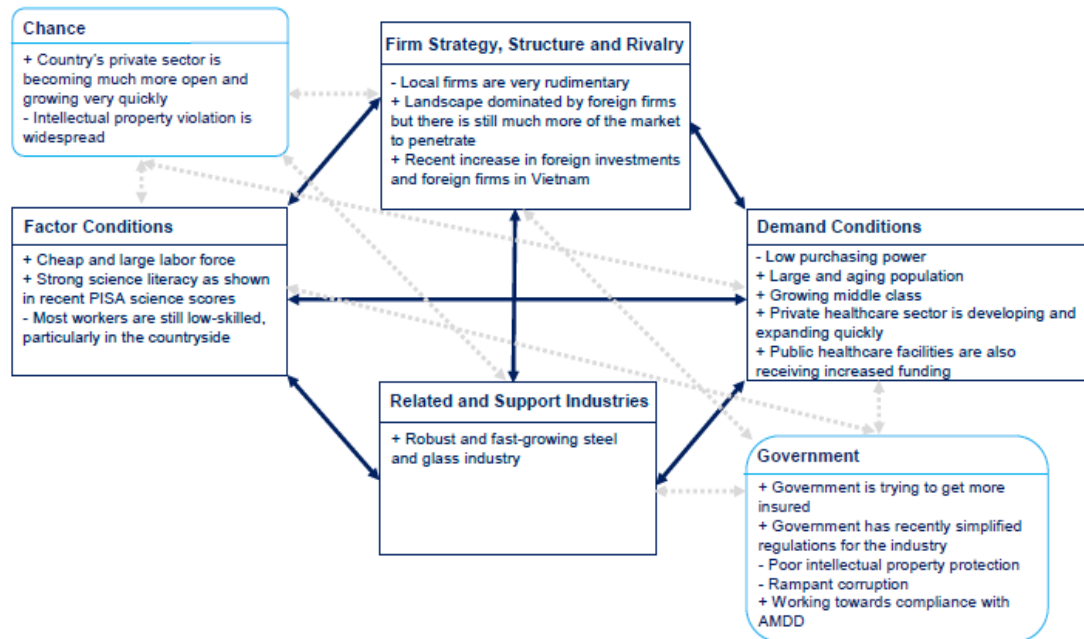
²⁵⁸ Ipsos Business Consulting, available at <https://www.slideshare.net/Ipsosbc/overview-of-vietnam-healthcare-and-medical-device-market>

²⁵⁹ https://www.pacificbridgemedical.com/wp-content/uploads/2015/11/2011.11.03_Vietnam-Medical-Device-Market.pdf

²⁶⁰ <https://www.andamanmed.com/vietnam/>

Figure 38: Potential for mobilizing cluster development (Vietnam)

Vietnam's Medical Device Industry



3.7 POLICY RECOMMENDATIONS

It is undeniable that ASEAN has a large and rapidly growing medical device industry. Already valued at over US\$5 billion, it is expected to expand to around US\$8.5 billion by 2021 with a projected annual growth rate of 9.7 – 11 percent. This rapid growth is supported by three crucial tailwinds, namely a population of 600 million that is fast aging, a burgeoning middle class, and the increasing prevalence of non-communicable diseases. An aging population naturally provides more potential healthcare customers. A burgeoning middle class brings with it a greater purchasing power and demand for better healthcare, which often requires better medical devices. Lastly, the increasing prevalence of non-communicable diseases such as cancer, diabetes and cardiovascular diseases will require advanced medical devices for diagnosis, treatment, and prevention.

Large multinationals have taken notice of this vast potential within ASEAN and are already responsible for over 90 percent of all high-end medical devices in the region. ASEAN imports billions of dollars' worth of high-end medical devices every year. Foreign firms are also taking advantage of the region's relatively cheap labor force to establish manufacturing bases to both export products back home and to sell them in local markets. In the case of Singapore, large multinationals have also established research and development centers to take advantage of the country's talented labor force.

Although ASEAN's medical device industry is unquestionably large, the penetration of local firms into the upper echelons of the value chain is still extremely low. ASEAN firms largely produce low-end medical supplies, which rely on rudimentary raw materials and are only designed to be used

once, or a few times at most. Such products include rubber gloves, syringes, needles, and catheters. Additionally, local firms also produce basic components of more sophisticated devices for foreign firms. These products contain little innovation and few value-added features, if any.

Local firms struggle to move up the value chain due to myriad of reasons, primarily a lack of funding, a lack of trust by consumers of local medical products, and, most importantly, a lack of technology and knowhow required for making high-end, sophisticated equipment. Nevertheless, local firms do have unique advantages that they can leverage against foreign firms, as local firms possess greater knowledge of local regulations, consumers' taste, and local demand. With ASEAN being such a heterogeneous region, this insight can be crucial and is much needed by multinational firms. There is also a large untapped market for mid to high-end products that are localized for each country's specific contexts. Imported devices are expensive and sometimes contain advanced features that are not relevant for local requirements. Medical providers would like to have cheaper, more localized, and reliable alternatives, which are currently often not possible to source locally.

ASEAN governments have tried to enhance their medical device industry by offering an incredible variety of generous incentives to attract foreign firms to invest in their countries. These incentives may be successful in luring foreign companies to produce high-end and localized medical devices in the country but can also significantly increase competition for already struggling local firms. Governments must therefore strike a balancing act between enhancing their medical device industries and also elevating the capacities of local firms.

To help facilitate the growth of local SMEs, ASEAN governments may consider introducing a number of possible measures, including:

- 1) **Require local content and technology transfer** – Governments can demand a practical but progressive level of local content sourcing in the production of foreign firms as well as the transfer of technology and knowhow for every foreign investment project in the medical device industry in exchange for generous investment incentives. This does not necessarily mean that trade secrets must be transferred but at least a working knowledge should be transferred either through local partners or educational institutions through a corporate social responsibility (CSR) program.
- 2) **Call for local skill-building investment** – Governments may require foreign investors to provide skill training directly or collaborate with local education institutions. Foreign firms can help train a new generation of technicians in the field through a combination of lectures, internships, job trainings, or similar programs. This can help address the skill gaps prevalent in the region.
- 3) **Make joint venture investments compulsory** – Governments may require local partnership and stipulate a maximum level of foreign ownership in foreign investment projects. This will ensure that there will be meaningful job creation and transfer of knowledge to local companies. Many foreign firms already rely on local partners for on-the-ground insight. Joint ventures should be mandated as numerous studies have shown that the most substantial knowledge transfer happens when locals have a stake in the ownership of a company.
- 4) **Support local investments in medium to high-end products** – ASEAN governments should support local firms in producing medium to high-end products that are localized for each country's specific contexts. They can do this through numerous measures such as providing funding support, requiring state-owned medical facilities to source these products locally or providing tax incentives for private facilities to do so as well as utilizing a cluster approach to strengthen the capacities of local SMEs in the medical device industry.
- 5) **Enforce regional standards and regulations** – When the ASEAN Medical Device Directive is fully in force in 2020, ASEAN members must strictly enforce the guidelines in every country. Compliance to regional agreements is far from guaranteed in ASEAN. However, if successful, a harmonized system of regulations and registration process in all

member countries can go a long way towards achieving a truly single regional market in the medical device industry that can benefit both local SMEs and foreign partners.

- 6) **Utilize clustering to build industry competitiveness** – Medical devices often take a long time and a substantial investment in R&D to develop. In addition to providing adequate funding for medical device companies, ASEAN governments can also utilize the clustering approach to create an ecosystem that bring together foreign companies, local companies, suppliers, service providers, academic institutions, healthcare providers, insurance companies, and government regulators. Studies have shown that industry clusters can strengthen the overall competitiveness of firms, even among competitors, by increasing productivity, stimulating innovation, and presenting opportunities for entrepreneurial activities, thus benefiting every firm in the cluster, foreign and local alike.²⁶¹

²⁶¹ <http://www.ibrc.indiana.edu/ibr/2015/spring/article2.html>

4. TEXTILE AND APPAREL INDUSTRY

4.1 INDUSTRY OVERVIEW

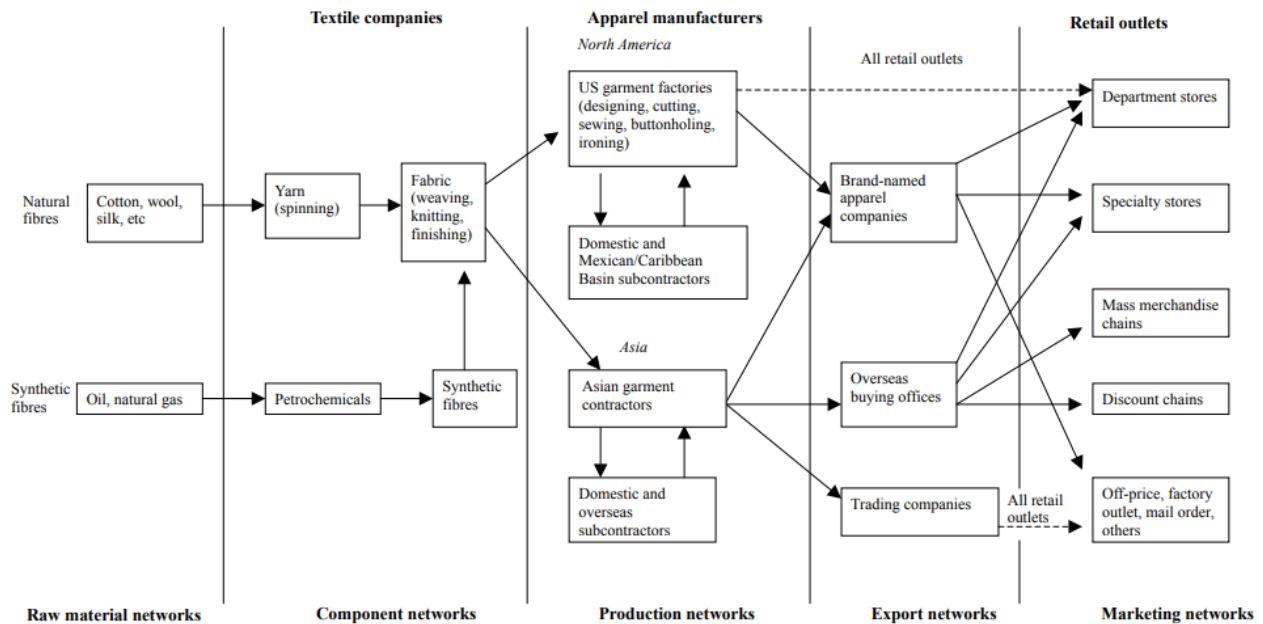
The global textile and apparel industry had an estimated value of US\$1,100 billion in 2014, accounting for 1.8 percent of global GDP, and is expected to reach US\$2,110 billion by 2025. There are four major consumer markets: the EU countries, the U.S., China, and Japan (Tot, 2014).

The textile and apparel sector is regarded as one of the world's oldest and most diverse manufacturing industries, significantly contributing to the global economic growth (Europa, 2013). According to the World Trade Statistical Review 2018 by the World Trade Organization (WTO), the value of world textiles (SITC 65) and apparel (SITC 84) exports totaled US\$296.1 billion and US\$454.5 billion, respectively, in 2017, increased by 4.2 percent and 2.8 percent from the previous year.²⁶²

Textile and apparel trade encompasses multifaceted levels and phases of production where its supply chain typically extends across different countries and impacts numerous supporting activities from raw material sourcing to design, assembly, manufacturing, marketing, and retailing (Hamid & Aslam, 2017).

The textile and apparel value chain is typically organized around five main parts: raw material supply, including natural and synthetic fibers; provision of components, such as the yarns and fabrics manufactured by textile companies and accessories, such as buttons and zippers; production networks made up of garment factories, including their domestic and overseas subcontractors; export channels established by trade intermediaries; and marketing networks at the retail level (see Figure 39).²⁶³

Figure 39: The textile and apparel value chain



Source: Appelbaum and Gereffi (1994), p. 46.

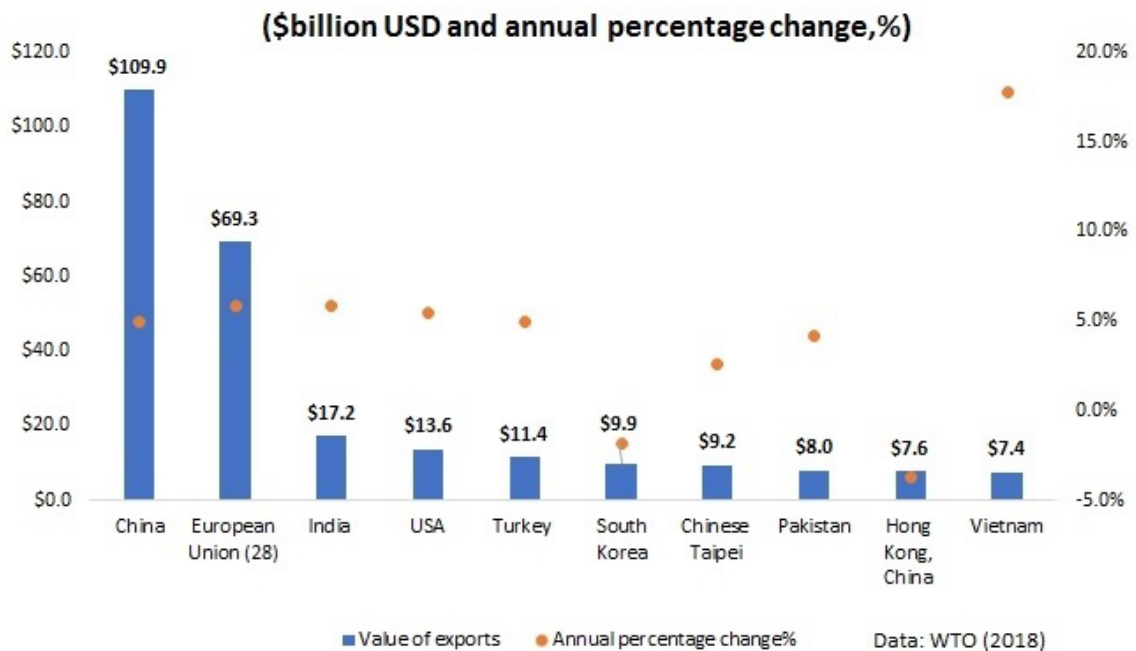
²⁶² <https://shenglufashion.com/2018/08/16/wto-reports-world-textile-and-apparel-trade-in-2017/>

²⁶³ https://www.unido.org/sites/default/files/2009-12/Global_apparel_value_chain_0.pdf

Being a labor-intensive industry, the textile and apparel industry employs around 60 to 75 million workers worldwide (SGS, 2018; Stotz & Kane, 2015).

Due to the current wave of globalization and technological innovation, the textile sector is becoming more and more competitive. Although production output and employment in the industry are growing, prices are falling as textile manufacturing and production methods have become more vertically integrated than ever before (Institute of Manufacturing, 2006). The Figure below shows that China dominated the world in textile exports in 2017 at US\$109.9 billion, followed by the European Union and India at US\$69.3 billion and US\$17.2 billion, respectively. Altogether, the three accounted for 66.3 percent of world's textile exports, up from 65.9 percent in 2016. The three regions also enjoyed a faster-than-average export growth in 2017, China by 5.0 percent, the EU by 5.8 percent, and India by 5.9 percent.²⁶⁴

Figure 40: Top ten exporters of textiles, 2017



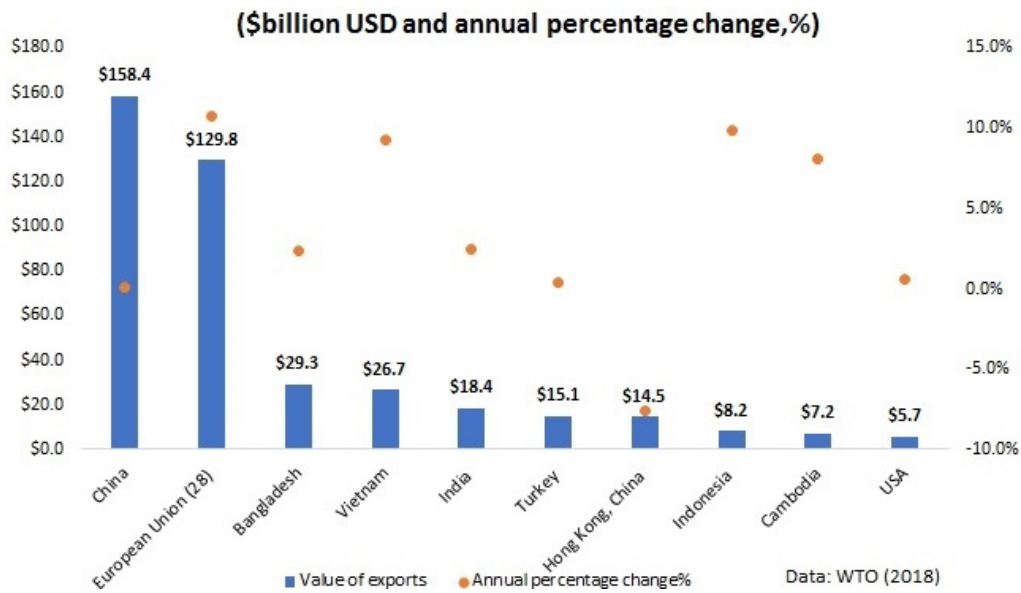
Source: WTO, 2018

Countries with dense populations and low wages are more popular amongst global investors as the textile and apparel industry is considered one of the most labor-intensive manufacturing industries (Ksiezak, 2016). With the exception of the EU, which was the second-largest clothing exporter in 2017, the other top clothing exporters have abundant domestic labor supplies. China is the largest apparel exporter at US\$158.4 billion. The EU follows at US\$129.8 billion. Bangladesh and Vietnam are the next largest exporters, at US\$29.3 billion and US\$26.7 billion, respectively (Figure 41). Altogether, the top four exporters account for 75.8 percent of world market shares in apparel, an increase from 74.3 percent in 2016 and a substantial increase from 68.3 percent in 2007.²⁶⁵

²⁶⁴ <https://shenglufashion.com/2018/08/16/wto-reports-world-textile-and-apparel-trade-in-2017/>

²⁶⁵ <https://shenglufashion.com/2018/08/16/wto-reports-world-textile-and-apparel-trade-in-2017/>

Figure 41: Top ten exporters of clothing, 2017



Source: WTO, 2018

Consumer behavior and trends have strong impact on the textile and apparel market as price, quality, branding, and promotion play a critical role in consumer spending decisions and purchasing behavior. The global garment industry has witnessed a shift of customer purchasing behavior from traditional retail channels to electronic or online shopping (Sanad, 2016).

There is no doubt that consumers are more sophisticated and technology driven than ever before (McKinsey & Company, 2016). In terms of sales channel, technology plays an important role in changing consumer behavior. Traditional sales channels through physical stores are declining as consumers find it more convenient and cheaper to use online platforms to make purchases (Punekar & Gopal, 2016).

Increasingly, e-commerce is becoming a common means of business operation and marketing, particularly for the clothing market, where fashion brands—large and small, global and domestic alike—now have adopted e-commerce to provide a convenient way to shop to their customers. In Thailand, for example, a survey of social media users found that 33.5 percent of them purchased clothing items on the internet. The survey participants cited the convenience of online shopping and competitive prices as the primary reasons for their purchase decisions (Napompech, 2014).

4.2 ASEAN LANDSCAPE

Over the years, ASEAN has gone through a number of regional industry restructurings, particularly Thailand, Malaysia, Vietnam, Laos PDR and Cambodia, where intercountry coordination, free trade policies, and cross border investments have strengthened the textile and apparel trades between ASEAN nations (Siy, Carrillo & Congep, 2007).

The textile and apparel industry is a primary export commodity for the majority of ASEAN member states, turning the ASEAN region into a prominent supplier to the global textile and apparel industry, accounting for 7.2 percent of world exports (Mahbubah & Muid, 2016). In 2015, ASEAN member states had a share of 19.7 percent of the U.S.'s apparel and garment imports, increasing from 19.2 percent in the previous year (EIU, 2016). In 2016, the largest textile and apparel exporting ASEAN nations were Vietnam (US\$21 billion), Indonesia (US\$8 billion) and the Philippines (US\$6.6 billion) (World Bank, 2018).

The industry provides over 9 million jobs in the ASEAN region, the majority of which are filled by young women. Over 70 percent of the workers in this sector in Cambodia, Lao PDR, the Philippines, Thailand, and Vietnam are female (ILO, 2016). Overall, developing ASEAN countries hold comparative advantage in the textile and apparel industry allowing them to diversify their exports away from traditional commodities in agricultural sector such as growing crops and farming (Diao & Somwaru, 2002).

4.3 ASEAN MEMBER STATES

Five ASEAN countries, namely Vietnam, Indonesia, Cambodia, Malaysia and Thailand, made it into the list of the world's top 15 clothing exporters in 2015 (see Figure 42). The majority of the top exporters were Asian countries, led by China. As such, the major competitors of ASEAN in apparel exports are China, Bangladesh, and India, which all compete in much the same product categories as ASEAN.

Figure 42: Top 15 global clothing exporters, 2015

Rank	Country	Value (\$, billion)	Share (%)
1	China	175	39.3
2	European Union (28)	112	25.2
3	Bangladesh	26	5.9
4	Vietnam	22	4.8
5	Hong Kong, China	18	
6	India	18	4.1
7	Turkey	15	3.4
8	Indonesia	7	1.5
9	Cambodia	6	1.4
10	United States	6	1.4
11	Pakistan	5	1
12	Sri Lanka	5	1
13	Malaysia	5	1
14	Mexico	4	0.9
15	Thailand	4	0.8

Source: ILO, 2017.

Brunei Darussalam

The value of Brunei's production of apparel and textile was reported at US\$6.03 million in 2017, with a record output of US\$8.16 million in 2014 (CEIC Data, 2017). There is not much data on Brunei's textile and apparel industry cluster, as the industry is not a leading export sector of Brunei. The country has Foreign Trade Agreements with ASEAN member states, Japan, Korea, China, India, Singapore, Malaysia, Australia, and New Zealand (USTR, 2018).

Moreover, Brunei's textile and apparel manufacturers work closely with the Brunei Industrial Development Authority (BINA) to develop a training program for industry professionals in the textile and apparel sector with the main goal of nurturing young entrepreneurs in the industry (Fibre2fashion, 2014). In terms of ease of doing business, Brunei is rated 59 out of 185 countries. The growth of Brunei's garment sector is limited by high labor costs and a skilled labor shortage (Commonwealth Network, 2018).

Cambodia

Cambodia has been the sixth fastest growing economy in the world over the past two decades with an average GDP growth rate of 7.6 percent, according to World Bank open data. This growth has been driven largely by its garment exports.²⁶⁶ Cambodia enjoyed an average annual growth rate of 10.8 percent in garment exports from 2014 to 2016. The country exported US\$6.3 billion worth of garments in 2016, accounting for 78 percent of its total merchandise exports in 2016 (ILO, 2017).

Cambodia relies greatly on its garment manufacturing industry for exports to developed countries. Cambodia's largest garment market is the European Union, accounting for 40 percent of Cambodia's total garment exports, the U.S. (30%), Canada (9%), and Japan (4%). Over 1,400 garment manufacturing enterprises are located in Cambodia, representing around 200 international brands including Adidas, H&M, Marks & Spencer, and Uniqlo (ASEAN Briefing, 2017; Fashion Revolution, 2018; Research and Markets, 2016).

While China and the EU led the world in garment exports in 2017, three ASEAN countries also made it in the world's top ten garment exporter list with Cambodia at number nine, trailing behind its ASEAN neighbors Vietnam and Indonesia at numbers four and eight, respectively (WTO, 2018).

The figure 43 shows Cambodia's employment data from 2014 to 2016 with a total of 504,000 workers in the garment sector.

Figure 43: Total garment and footwear workers in Cambodia

	2014				2014	2015				2015	2016				2016
	Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4	
Total garment and footwear workers (period av., '000)	539	561	576	581	564	597	616	635	643	623	628	592	600	601	605
% change (year-on-year)	17.6	16.5	11.7	9.1	13.5	10.7	9.8	10.3	10.7	10.4	5.3	-3.9	-5.7	-6.6	-2.9
Workers in garment sector (period average, '000)	454	475	484	488	475	500	516	533	538	522	525	494	499	498	504
Workers in footwear sector (period average, '000)	85	87	92	93	89	97	101	102	106	101	103	98	101	103	101

Source: ILO, 2017

²⁶⁶<https://www.reuters.com/article/cambodia-garments/cambodias-garment-export-growth-expected-to-slow-next-year-manufacturers-group-idUSL3N1082N3>

Indonesia

Indonesia ranked as the eighth largest exporter of apparel in the world in 2017 (WTO, 2018). Its textile and garment industry dates back to 1968, when Japanese investors helped establish the industry in the country, predominantly in spinning and fiber-making, in response to increased labor costs and labor shortages in Japan (Mahbubah & Muid, 2016).

Indonesia enjoyed a huge 54.4 percent average annual growth rate in its textile and apparel exports from 2005 to 2011. To satisfy its garment production needs, the country imported US\$8.14 worth of textile in 2012, including 55.8 percent of its fabric needs, 27.2 percent of its fiber needs, and 7.9 percent of its yarn needs (EIBN, 2014). Indonesia exported US\$12.3 billion worth of textile and apparel in 2015 and saw a slight increase to US\$12.4 in 2017. The sector provided employment to three million Indonesian workers (Sudrajat, 2016; Apparel Resources, 2018).

Indonesia's largest listed garment manufacturer, PT. Pan Brothers Tbk., employed over 20,000 workers in 2014. The company utilized its production capacity of 90 million garments per year to supply to long-standing apparel brands such as The North Face, Kathmandu, Lacoste, Armani, and Ralph Lauren (PT. Pan Brothers Tbk, 2017). Other key players in the Indonesian textile and apparel industry include PT Asia Pacific Fibers Tbk., PT Sri Rejeki Isman Tbk., and PT Polychem Indonesia Tbk (Mordor Intelligence, 2018).

Lao PDR

The textile and apparel industry is one of Laos' prominent exporting sectors. Nonetheless, the sector's share of the global market remains low compared with its neighboring countries at only 0.05 percent in 2013, as opposed to 3.4 percent for Vietnam, 1 percent for Cambodia, 0.8 percent for Thailand, and 0.2 percent for Myanmar (Nolintha & Jajri, 2015).

Laos' textile and apparel exports reached US\$165 million in 2016, made possible by 85 garment factories that created 27,000 jobs (The Nation, 2017). The majority of Laos' garments are exported to the EU (75%), the U.S. (17%), Japan and Canada (3% each), and other nations (2%) (World Bank Group, 2012). However, Laos does not benefit from preferential market access as the country relies on raw material imports from China and Taiwan, which account for 70 percent of its total production costs (WTO, 2012).

Malaysia

Malaysia's textile and apparel industry was the country's eleventh largest exporting sector in 2017 with an estimated value of US\$3.7 billion, representing 1.6 percent of the country's total exports of manufactured products. Malaysia's top five export destinations of textile and apparel products include the U.S., Japan, China, Singapore, and Turkey, with the U.S. representing the largest export market with over 18 percent of the total industry's exports volume (Biz Vibe, 2017).

The textile and apparel industry in Malaysia consists of two main activities: 1) the upstream sector which includes production activities of primary textiles such as fiber, woven, knitting and wet processing and 2) the downstream sector which is comprised of manufacturing of finished garments such as shirts, pants and home textiles (Ministry of International Trade and Industry, 2017).

Myanmar

Due to its competitive minimum wage of around US\$90 per month and the flexibility to set up textile and garment factories in Myanmar—the Myanmar Investment Commission (MIC) allows 100 percent Foreign Direct Investment (FDI)—the country is considered an attractive base for manufacturers in the textile and apparel sector (Hong Kong Trade Development Council, 2016).

Myanmar's textile and apparel industry enjoyed an average growth of 15.7 percent annually from 2010 to 2014 (Huynh, 2016) and employed 300,000 workers for its 389 factories, 171 of which are locally-owned, 196 are foreign-owned, and 22 are joint venture factories in 2016 (Nyein, 2016). The total textile exports by Myanmar in the fiscal year 2014/2015 surpassed US\$1 billion, with two key markets being the EU (47.6%) and Japan (28.3%).

The Philippines

The Garments and Textile Industry Development Office (GTIDO) under the Department of Trade and Industry reported that Philippines textile and apparel industry's exports experienced a steady growth between 2009 and 2011 with textile exports totaled US\$162 million and apparel exports totaled US\$1.92 billion in 2011 (Textile World Asia, 2013).

The Philippines then faced a decline in the textile and apparel industry in 2015 as a result of the challenge of competing with other developing ASEAN countries. Countries like Vietnam, Cambodia, and Indonesia could produce higher volumes of products at lower costs (BOI, 2016; Ong, 2012). Nevertheless, the Philippines bounced back and saw a strong growth in the sector with an increase in total sales by 22.5 percent from US\$4.187 billion in 2016 to US\$5.13 billion in 2017 (Textile Excellence, 2017).

Singapore

The textile and apparel industry in Singapore includes around 5,000 companies (500 manufacturers and 4,500 wholesalers and retailers) doing business in manufacturing, distribution, and retail. The sector was worth around US\$6.3 billion in 2013 (ITA, 2016).

The revenue generated by the Singapore fashion industry is estimated to be US\$882 million in 2018, of which the apparel segment comprises the largest share at US\$671 million. The fashion industry has an expected annual growth rate of 11.6 percent. China is the main market and source of revenue for Singapore's fashion industry (Statista, 2018).

In recent years, manufacturing within Singapore's textile and apparel industry has gradually declined as a result of rising labor costs and the difficulty to compete with other countries such as Vietnam where manufacturing operations are more affordable for investors (ITA, 2016).

Thailand

Thailand's textile and apparel industry has enjoyed positive growth, with export revenue of approximately US\$7 billion in 2017 accounting for over 3 percent of the country's total exports (BOI 2017). Thailand's textile and apparel sector is one of the most competitive in the world due to its reasonable costs of labor and favorable market position. Thailand has over 3,500 small and medium-sized textile mills and apparel manufacturers (Watchravesringkan, Karpova, Hodges, & Copeland, 2010).

Employing around 824,500 to 1,000,000 workers in the garment industry and about 200,000 employees in the textile sector, Thailand's textile and garment industry contributes around 12.3

percent to the country's GDP and has an export share of 1.04 percent of the global market (Clean clothes, 2015).

Thailand ranks as the 11th largest exporter of apparel and clothing accessories in Asia; major export destinations are ASEAN nations, the U.S., Europe, and Japan. Thailand's textile and apparel industry spans a complete value chain from upstream, midstream, to downstream with more than 4,700 local producers in the textile sector (BOI, 2017).

Vietnam

Vietnam is the third largest garment exporter in the world behind China and Bangladesh. The sector accounted for 16 percent of Vietnam's total exports in 2017, a 10 percent increase from the previous year (Akter, 2018). Vietnam's garment exports had a value of US\$36.9 billion in 2016. The sector created roughly 2.6 million jobs in 2013, representing 36 percent of its manufacturing employment (ILO, 2016).

Vietnam saw a strong growth in the textile and apparel industry from 2015 to 2016, when numerous manufacturers and suppliers of well-known brands such as Nike, Puma, Adidas, Levi's and Timberland opened their factories in the country (ASEAN Investment Report, 2016; IFC, 2017). The International Trade Administration reported that Vietnam has over 3,800 companies in the textile and apparel sector. Textiles and apparel represent one of the country's leading export industries, with key advantages including its low-cost labor and a relatively young and stable workforce (ITA, 2016).

Table 27: Profile of textile and apparel industry in ASEAN

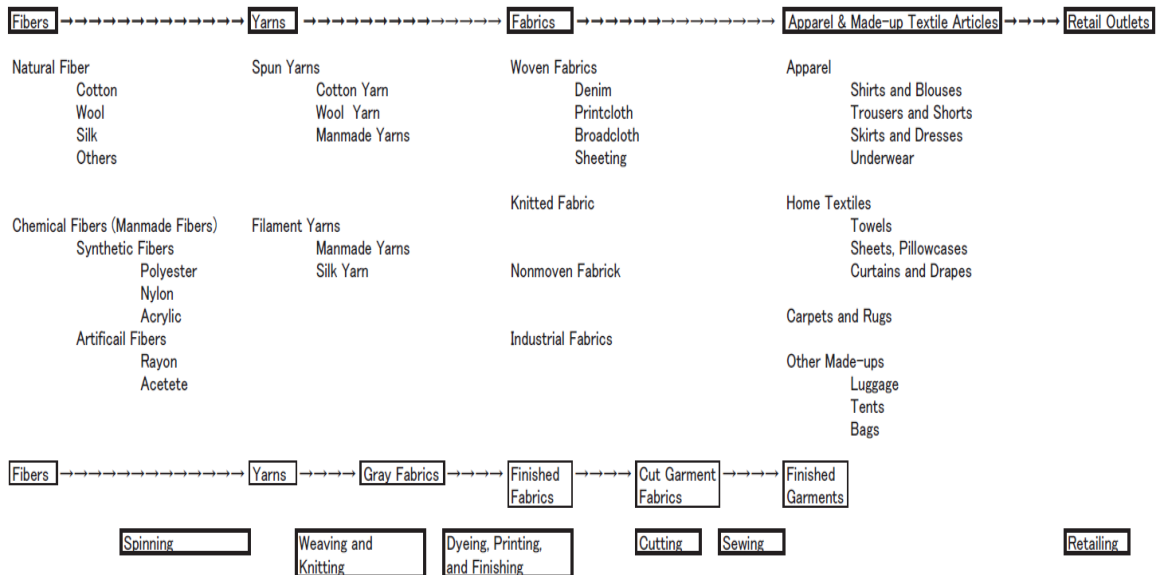
Brunei	GDP from textile and apparel valued at US\$6.03 million
Cambodia	Industry growth rate of 10.8% between 2014-2016
Indonesia	Industry represents 2% of national GDP and 7% of total exports
Laos PDR	23.61% of national exports are textile and apparel related
Malaysia	Industry valued at US\$3.7 billion, 1.6% of total manufacturing exports (2017 data)
Myanmar	Total garment exports surpassed US\$1 billion in FY2014/2015 with average growth of 15.7% from 2010 to 2014
Philippines	Strong growth with total sales of US\$5.13 billion in 2017, increased by 22.5% from 2016
Singapore	Fashion industry worth US\$882 million with annual growth of 11.6% in 2018, apparel market was the largest segment valued at US\$671
Thailand	Export revenue of US\$7 billion, ranked 11 th in Asian apparel and clothing accessories market
Vietnam	Third largest global garment exporter behind China and Bangladesh, garment export accounted for 16% of total exports

Note: Compiled by Kenan Institute Asia, all data from 2016 unless indicated otherwise.

4.4 GLOBAL VALUE CHAINS

A typical global value chain in the textile and apparel industry involves five main stages: 1) Supply of raw materials; 2) Production of intermediate goods; 3) Design and manufacturing of finished products; 4) Export by trade intermediaries; and 5) Marketing and distribution (Tot, 2014). Figure 44 illustrates the process of apparel manufacturing from the making of fibers through finished product retailing to consumers.

Figure 44: The textile and apparel manufacturing process



Source: Esho, 2015.

In terms of the global value chains, the demand within the textile and apparel industry largely derives from developed countries, while the value chain activities are commonly delivered by developing countries due to lower costs of labor in countries like Vietnam, Indonesia, and Cambodia in the ASEAN region (Ambastha, 2018; Hamid & Aslam, 2017).

As a buyer-driven industry, the global textile and apparel value chain fundamentally concentrates on research and development activities, design, sourcing, distribution, marketing, and financial services to strategically link factories and suppliers with retailers and consumers (Fernandez-Stark, Frederick, & Gereffi, 2011).

Furthermore, the textile and apparel industry shows strong linkages with other sectors, including the agricultural sector for natural fibers and non-agricultural segments such as petrochemicals for synthetic fibers and accessories, transportation, and communication (Diao & Somwaru, 2002).

4.5 INDUSTRY GROWTH POTENTIAL

The textile and apparel sector is experiencing a stable growth as a result of an industrial revolution where labor trends correspond with technological advances and the transition of human capital and working condition coincide with the advancements in the market (Global Edge, 2018).

Nonetheless, one of the key limitations within the global textile and apparel industry is import tariffs, which are different in each country and are generally negotiated and determined through bilateral and regional agreements (Burris, 2015).

Euler Hermes Economic Research reported a global rebound in the luxury good segment, which suggests a rise in demand for fashion apparel after a plateau period. The company also predicts a strong long-term demand potential for apparel products, as the consumption of clothing in emerging markets is expected to make up a greater share of household spending (see Figure 45).

Figure 45: Key industry insights in the textile and apparel industry

Key Players

Country	Role	Sector Risk
China	#1 producer #1 exporter	●
Italy	#3 producer #3 exporter	●
India	#2 producer #4 exporter	●

Strengths

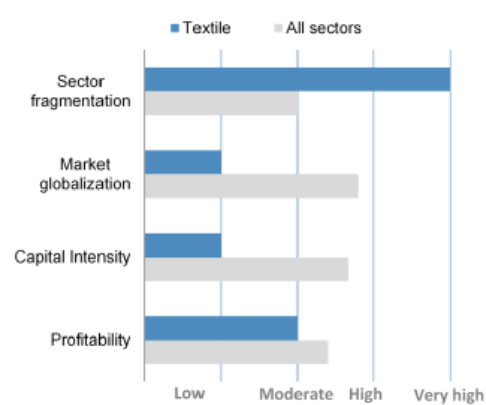
- Strong long-term demand potential as clothing consumption in emerging markets is likely to take a greater share of household spend
- Global rebound in the luxury goods segment after a plateau period

Subsectors Insights

Apparel: 3-D printed clothes still belong mostly to art galleries and are years ahead from the mass market

Materials: Cotton price rose 12% on average in 2017

ID Card



Weaknesses

- Decreasing length of fashion cycles giving rise to sustainability issues
- Oversaturation of the retail space in the context of digitalization

Recent Sector Risk Changes



Source: Euler Hermes Economic Research, 2018.

4.6 GOVERNMENT POLICY

Government policies and industry-imposed requirements are key regulating factors for standard management and quality control in the textile and apparel industry. ASEAN members have agreed on a number of trade liberalization schemes that have facilitated freer flows of trade between member states, minimized restrictions, made the regional economies more open, and enhanced overall market efficiency. Some of these agreements include the following:

ASEAN Free Trade Area (AFTA)

All ASEAN member states have benefited from the Common Effective Preferential Tariff (CEPT) scheme where the ASEAN-6²⁶⁷ have reduced intra-regional tariffs down to the 0-5 percent range. The CLMV countries (Cambodia, Laos PDR, Myanmar, and Vietnam) have committed to lowering the tariffs down to 5 percent at a maximum (ASEAN, 2018).

Mutual Recognition Agreements (MRA)

While all member states are free to set their own regulations and standards as well as to approve or regulate their quality and industry standards, the Mutual Recognition Agreements proposes that, to achieve ASEAN economic integration, each member shall mutually recognize the assessment procedures and offer equivalent methods of accreditation and certification to improve the harmonization of standards and maintain compliance and obligations (ASEAN Consultative Committee on Standard and Quality, 2016).

Industry Standards and Compliance

Industry leaders, including global brands and transnational manufacturers such as Nike, Levi's, H&M, and Adidas, are investing heavily in R&D to improve production efficiency by using technology to meet industry compliance, particularly with vendor requirements concerning managing product quality and maintaining environmental sustainability standards (ILO, 2016). Adidas and Nike provide examples of this:

Adidas

Adidas currently focuses on the environmental impact of the textile materials used and aims to use sustainable materials such as organic cotton, Polylactic Acid (PLA), and TENCEL fiber. Although there is no standardized test at the moment, Adidas partners with Bluesign to assess the chemical inventory of its strategic apparel. In so doing, Adidas sets four key areas to test and source materials:

- 1) Production phase: to assess shedding during production;
- 2) Testing: to define a standardized method of testing;
- 3) Use phase: to verify external standards in product care;
- 4) Future materials: to collaborate with industry leaders to develop innovative textile
- 5) solutions.

Furthermore, the company is working with key external industry leaders to develop proactive strategies to validate a common test method by the end of 2018 (Adidas, 2018).

²⁶⁷ The ASEAN-6 refers to the original founding members that include Brunei, Indonesia, Malaysia, the Philippines, Singapore and Thailand.



**SELECTING
RAW MATERIALS**

MAKING FABRICS

ASSEMBLING AND PACKAGING

FINAL PRODUCTS

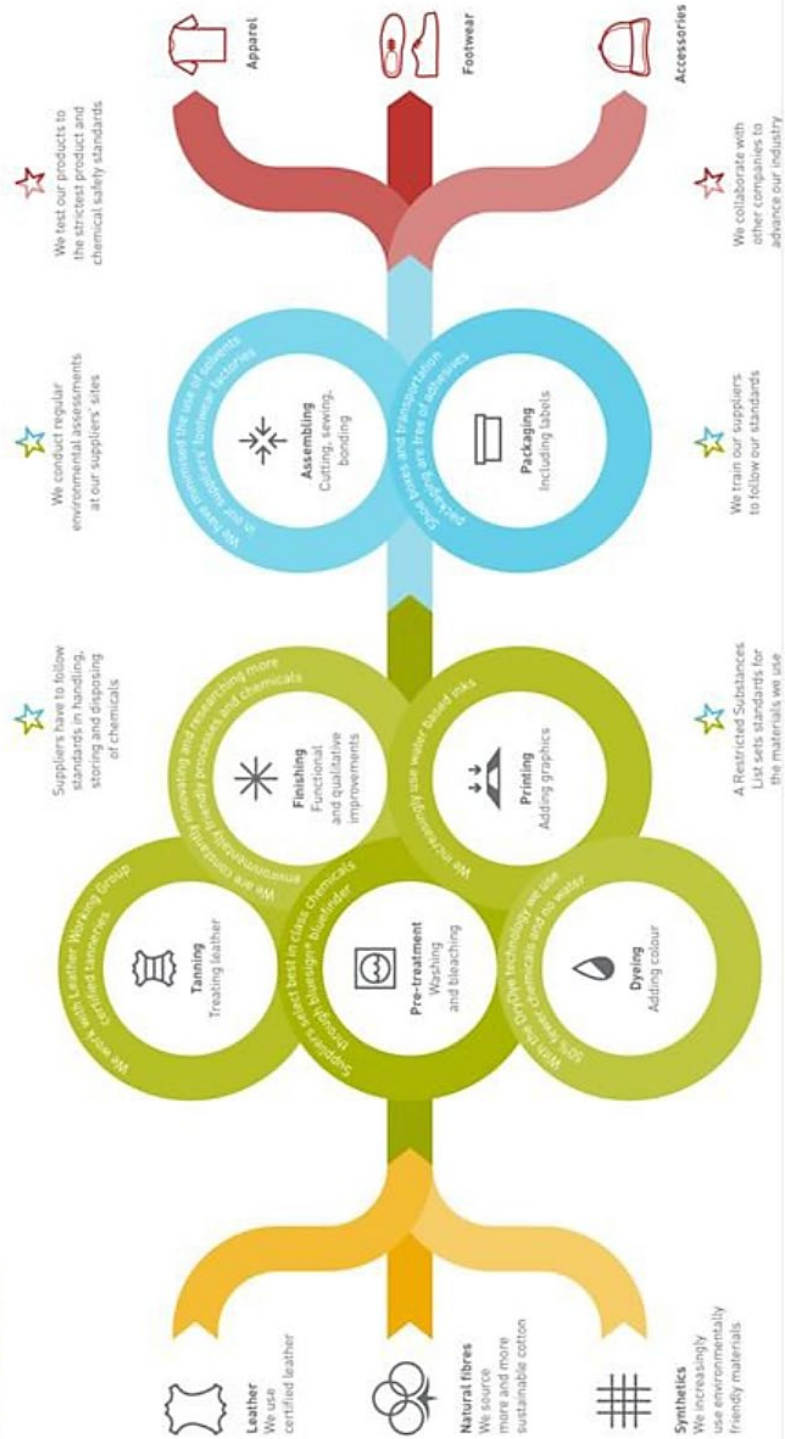


Figure 46: Adidas's current industry testing standards

Source: Adidas, 2018.

Nike

Nike's sourcing and manufacturing standards are similar to those of Adidas in terms of sustainability and ethical areas such as environmental protection, workers' rights, and commitments to promoting safety and fairness at work. The company's key focuses include reducing waste, using water efficiently, appropriately managing chemicals, and reducing carbon emissions. These aspects are addressed in the Nike Code of Conduct and Code Leadership Standards, which encompass respect, fairness, safety, and sustainability (Nike, 2018).

Figure 47: Nike Code of Conduct



Source: Nike, 2018.

Nike adopts industry-wide standards and works in collaboration with suppliers, member brands, industry associations, and organizations across the global supply chains including the Apparel and Footwear International RSL Management (AFIRM) Group, the Zero Discharge of Hazardous Chemicals Foundation (ZDHC), and the Sustainable Apparel Coalition (SAC). The brand uses resources such as the Manufacturing Restricted Substance List (RSL), the environmental footprint research data, and the Manufacturing Restricted Substances List (MRSL).

Figure 48: Nike's regulatory framework on the hazards of chemicals

ZERO DISCHARGE OF HAZARDOUS CHEMICALS (ZDHC)

Zero Discharge of Hazardous Chemicals (ZDHC) is a collaboration between member brands and associations to advance the textile and footwear supply chain toward zero discharge of hazardous chemicals.

APPAREL AND FOOTWEAR INTERNATIONAL RSL MANAGEMENT GROUP (AFIRM)

Apparel and Footwear International RSL Management Group (AFIRM) is a collaboration of leading brands across the apparel and footwear supply chains focused on advancing the global management of restricted substances in apparel and footwear.

SUSTAINABLE APPAREL COALITION (SAC)

The Sustainable Apparel Coalition (SAC) is collaborative platform to drive harmonization and convergence of performance measurement standards around social and environmental performance in the apparel and footwear value chain.

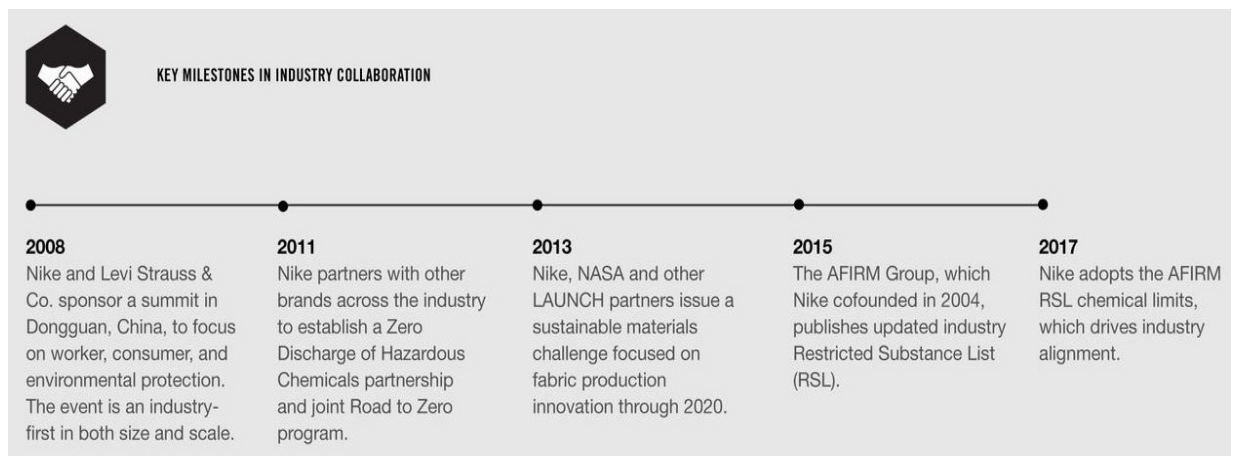
LAUNCH

LAUNCH is an open innovation platform designed to uncover breakthrough ideas in sustainable innovation industry wide, developed through a strategic partnership among Nike, NASA, the U.S. Agency for International Development and the U.S. Department of State.

Source: Nike, 2018.

Nike and Adidas both focus on maintaining corporate responsibility and commitments in ethical areas relating to sustainability, health and safety, fairness and labor standards, and respect and inclusion (Adidas, 2018; Nike, 2018). Other international brands such as Levi's, IKEA, M&S, and H&M adopt similar industry standards and practices in sustainability, waste and chemical management, and energy efficiency improvements to develop best practices by using new technologies and innovation to improve chemical management functions (Fashion for Good, 2018; GreenBiz, 2015). For instance, in 2015, Levi Strauss & Co. implemented the Water<Less™ technique and the Better Cotton Initiative to improve production efficiency by using less water as well as encourage customers to think about the environmental impact of apparel (Levi Strauss & Co., 2015).

Figure 49: Nike's key milestones in industry collaboration



Source: Nike, 2018.

Social and Labor Standards in the Textile and Garment Sector in Asia (SLSG)

The SLSG project was formed under the initiative of the Emerging Market Multinationals Network for Sustainability (EMM Network) to improve social and labor standards in the textile and apparel industry throughout Asia. The project works in Cambodia, Bangladesh, Myanmar and Pakistan with private and public organizations to manage the key challenges facing the industry and implement sustainability standards in legal rights and obligations concerning factories and its workers (EMM Network, 2018).

Source ASEAN Full Service Alliance (SAFSA)

The 10 ASEAN member states formed the ASEAN Federation of Textile Industries (AFTEX) as a regional body to serve the interest of ASEAN's textile and apparel industry. AFTEX launched the Source ASEAN Full Service Alliance (SAFSA) initiative in 2010 to create an integrated virtual vertical supply chain amongst global buyers and textile mills and apparel factories in ASEAN in order to offer a complete textile and apparel production service to the global market (Invest ASEAN, 2018).

As the world's leading inspection, verification, testing and certification service provider, SGS has worked with AFTEX to provide quality verification and testing services for the garments produced by SAFSA members. SGS services include the review of SAFSA's quality service standards and factory compliance with its Virtual Vertical Factories (VVF) requirements (SGS, 2018).

4.7 ASEAN GOVERNMENT POLICY BY COUNTRY

Brunei Darussalam

Brunei follows the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) as the main standard assessment systems (HKTDC, 2018). The kingdom has one of the lowest import tariff rates with an average Most Favored Nation (MFN) rate of 1.2 percent in 2015 (WTO, 2015).

Cambodia

Cambodia welcomes foreign investment and permits up to 100 percent foreign ownership in various markets, particularly the garment manufacturing industry where most investments come from China, Malaysia, Vietnam and Thailand (WTO, 2017). Cambodia adopted standards of assessment in accordance with the Law on the Management of Quality and Safety of Products and Services (2000) (Council for the Development of Cambodia, 2012). The country uses the Harmonized System (HS) and charges import and export duties with varying rates depending on the goods and the country of origin for import or the destination country for export. ASEAN members are qualified for special preferential rates of 0-5 percent (HKTDC, 2017).

Indonesia

The Investment Coordination Board is the government body in charge of all investment approvals and acts as a regulatory body for foreign investment and trades. The National Accreditation Committee (KAN) is responsible for the management of Indonesian National Standards (SNIs) under the National Standardization Agency (BSN) which follows the ISO and IEC standardization (HKTDC, 2018). For export and import, traders can use a new trading portal to register all export and import permits via the Indonesia National Single Window (INSW) (INSW, 2018).

Lao PDR

Investment Promotion Department (IPD) regulates foreign direct investment, business registration requirements, and tax incentives for which investment licenses and permits are required from the Ministry of Industry and Commerce, as well as an import-export license where foreign joint ventures must contribute at least 30 percent of the company's total capital (HKTDC, 2018). Laos' average trade tariff is 5.2 percent as the government attempts to protect local industries and manage multinational trades agreements with trading partners like Thailand, China, Japan, Korea, India, and Vietnam (HKTDC, 2018).

In the case of Lao PDR, where employee turnover rates are high and there is an inadequate labor supply, the national labor standards were developed to establish labor practices to improve working conditions in areas such as minimum wages, restrictions, compliance, and entitlements (World Bank Group, 2012).

The Department of Customs under the Ministry of Finance regulates import and export activities under the Customs Law (2011), according to which foreign businesses are required to register and may require an export/import license. The import tariff rates range from 5-40 percent depending on the trade arrangement and the industry (HKTDC, 2018).

Laos' product standardization is managed by the Department of Standardization and Metrology (DSM). All products must comply with the Law on Standards (2012) and the Ordinance No. 2501/MoIC.DTD for labeling requirements (HKTDC, 2018).

Malaysia

Malaysia signed several free trade agreements (FTAs) with ASEAN nations and China, Japan, Korea, India, Australia and New Zealand under which transactions within the free trade zone are tax-free; however, cotton trade faces a six percent goods and services tax (GST) as of 2015 (USDA, 2017).

The Ministry of Science, Technology and Innovation under the Department of Standards Malaysia outlines acceptable product standards, accreditation, and labelling requirements by maintaining competencies of Standards Development Agencies (SDAs) (Standards Malaysia, 2018). Malaysia uses the Harmonized System (HS) and all exports are charged between 0-15 percent GST while imported products are accountable for GST with an average of six percent duty on imports as set out in the Customs Duties Order 2017 (HKTDC, 2017).

Myanmar

Myanmar's trade policy involves bilateral and multilateral arrangements with its key trading partners Thailand, India, and China. Garments and apparels represent one of the country's major exports to these countries (HKTDC, 2018).

Industry standards are monitored by the National Standards and Quality Department of Myanmar and import and export activities are regulated by the Land Customs Act, the Sea Customs Act, and the Export Import Law (HKTDC, 2018).

Myanmar adopts the Harmonized System (HS) for import and export duties under which the rates range from 0-40 percent for imports, and there is a 50 percent exemption on profits from exports' income tax for manufacturing firms (HKTDC, 2018).

In the textile and apparel industry, payment of duties and taxes may be exempted if the goods are brought for inward processing intended for manufacturing before exporting, known as the "cutting, making, and packaging" (CMP) processes (National Trade Portal Myanmar, 2016).

The Philippines

The Department of Trade and Industry implements trade and investment policies in the Philippines, including agreements with ASEAN states, Australia, New Zealand, South Korea, Japan, and India, under which all international corporations must register with the Securities and Exchange Commission. If a company is registered with the Board of Investment and meets relevant requirements, it may be entitled to incentives (HKTDC, 2018).

The Philippines' National Standards Body (NSB) known as the Bureau of Product Standards (BPS) develops, implements, and oversees standardization activities in accordance with foreign standards, including International Organization for Standardization (ISO), International Electro Technical Commission (IEC), Asia Pacific Economic Cooperation (APEC), and ASEAN Consultative Committee on Standards and Quality (ACCSQ) (International Trade Administration, 2016).

Using the Harmonized System (HS), the Philippines' import duties depend on the type and origin of the goods. Special preferential rates are applied for ASEAN members and preferential rates are used for countries that have Most Favored Nation status. The rates range from 0-65 percent (HKTDC, 2018).

Singapore

Singapore has free trade agreements with several trading partners including ASEAN members, China, Japan, Korea, India, Australia, New Zealand, the U.S., Panama, Peru, Costa Rica and Jordan. Singapore Customs regulates imports and exports under the Customs Act, Regulation of Imports and Exports Act, and related legislation (HKTDC, 2017).

Consumer Protection (Safety Requirements) Regulations (CGSR) maintains product standards and quality assurance in Singapore to protect consumers from unsafe products. Enterprise Singapore imposes and manages labeling requirements and guidelines for consumer goods, including apparel (ITA, 2018).

Singapore uses the Harmonized System (HS), with 99 percent of imported goods duty free (with some applicable for GST and exports exempt from duties and GST (HKTDC, 2017)).

Thailand

Thailand has established bilateral and multilateral free trade agreements with ASEAN members, Australia, China, India, Korea, Japan, and New Zealand, Bahrain, Chile, and Peru and is in negotiations with Pakistan, the EU and the U.S. Key trading partners include the U.S., Japan, China, and Hong Kong (HKTDC, 2017).

The Thai Industrial Standards Institute (TISI) oversees national standardization activities under the Ministry of Industry and promotes Thai quality standards to the world market, including product certification, standardization, standard information, and product standards development and certification (ISO, 2018). TISI offers two types of industry standards: mandatory and voluntary certifications developed in accordance with government policy, and international and regional standards including the International Organisation for Standardisation (ISO) and the International Electrotechnical Commission (IEC), the ASEAN Consultative Committee for Standards and Quality (ACCSQ), as well as participation in the Standards and Conformance Subcommittee (SCSC) within the Asia Pacific Area Standards Congress (PASC) (TISI, 2018).

Thailand adopts the Harmonized System (HS) and charges both import and export duties for which the rates depend upon the country of origin and type of rates, including special preferential rates for countries that have special trade arrangements with Thailand, preferential rates applicable for countries that have Most Favored Nation (MFN) status with Thailand, and ordinary rates for all other categories HKTDC, 2017).

Vietnam

As an ASEAN, WTO, and China-ASEAN FTA member, Vietnam has an established agreement with regional and bilateral nations including ASEAN countries and China, Japan, Korea, India, Australia, New Zealand, Chile, and the EU (HKTDC, 2017). Vietnam signed a free trade agreement with the EU known as the EU-Vietnam Free Trade Agreement (EVFTA) on 2 December 2015 to ensure ease of trade, standards, export regulations and export duties, tariffs, and working permits for EU nationals (Grant Thornton, 2016).

Vietnam develops its own sets of product standards, technical regulations, and labeling which meet international standards through Decree No. 43/2017/ND-CP (HKTDC, 2017). Government requirements can make trading with Vietnam challenging, as Vietnam's Ministry of Industry and Trade has extended the requirements for licensing, which also affect the textile and apparel industry. Local importers also require an automatic import license (AIL) prior to shipments (International Trade Administration, 2016).

Vietnam uses the Harmonized Commodity (HS) system and charges import and export duties with preferential rates on imports from countries that have Most Favored Nation (MFN) status with Vietnam and special preferential rates for ASEAN members where export duties range from 0-45 percent depending on the type of the product (but mostly apply to natural resources) (HKTDC, 2017; PWC, 2016).

4.8 CLUSTER MOBILIZATION

Continuous improvement is an important key to maintaining competitive position in the textile and apparel market (Mulder, 2016). Singapore is an excellent example of a country that has adapted well to the changing market conditions. Whilst the industry competitiveness of many countries may have decreased from increasing costs of labor, Singapore has been able to explore new market opportunities in nanotechnology as part of its Nanotechnology in Manufacturing Initiative (NiMI) which focuses on being environmentally friendly, cost effective, and having efficient manufacturing processes (ITA, 2016).

This strategy has also been adopted by other ASEAN nations including Thailand and Malaysia, which have shifted from manufacturing traditional textiles to specializing in sectors within the textile and apparel industry, including, but are not limited to, medical textiles, water-repellent fabrics, automotive textiles, technical textiles, and protective textiles (BOI, 2017). Malaysian textile and apparel exports rose by 10 percent from US\$1.53 billion in 2016 to US\$1.69 billion in 2017 due to the growing demand for high quality textiles (YNFX, 2016).

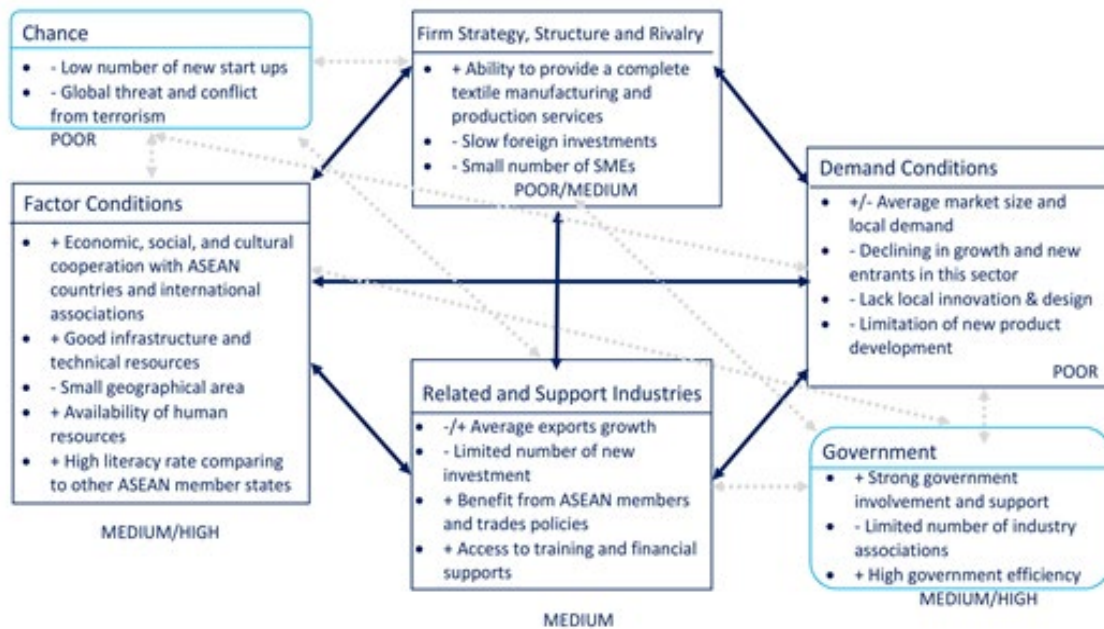
Rather than manufacturing at the lowest cost, product efficiency is a vital key to enhancing brand effectiveness, making a global presence, and meeting the changing needs of consumers (Globeledge, 2018).

It is important to note that foreign and domestic determinants should be taken into account in addressing the international competitiveness of an industry at industrial, national, and multinational levels (Vu & Pham, 2016). Analyzing environmental factors using Porter's Diamond Model creates an understanding of the interrelationship of key players in the industry and how the industry's competitiveness will affect the potential for mobilizing cluster development (Nimlaor, Trimetsoontorn & Fongsuwan, 2015).

Figure 50: Potential for mobilizing cluster development (Brunei)

**Potential for mobilizing cluster development:
a competitive advantage analysis using
Porter Diamond Model**

Brunei



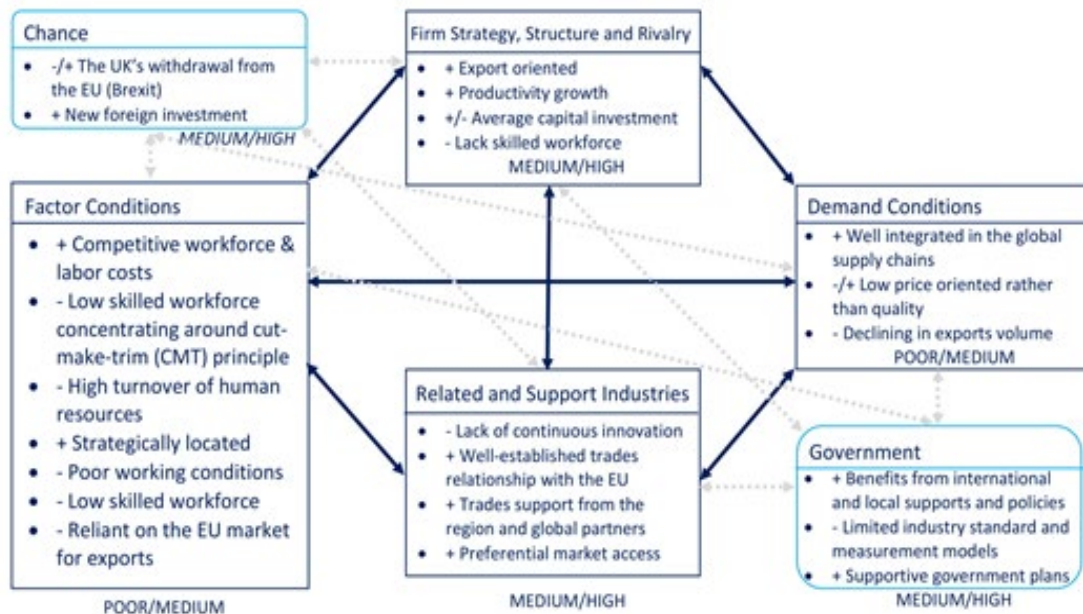
Brunei enjoys a stable economic environment and a high GDP per capita coupled with a high literacy rate compared to other ASEAN members. Nevertheless, there is no sufficient evidence and data to comprehensively address the competitiveness of Brunei's textile and apparel industry. Brunei has a small number of well-established textile and apparel manufacturers that are able to deliver complete textile production services.

Despite the fact that Brunei's government encourages more foreign investment and provides strong support to investors, the country has seen a limited number of new foreign investments and a small number of industry associations. Accordingly, there has been no real growth in Brunei's textile and apparel sector due to the lack of new innovation, weak domestic rivalry, low emphasis on product development, and small textile and apparel exports (Globoledge, 2018).

Figure 51: Potential for mobilizing cluster development (Cambodia)

**Potential for mobilizing cluster development:
a competitive advantage analysis using Porter
Diamond Model**

Cambodia



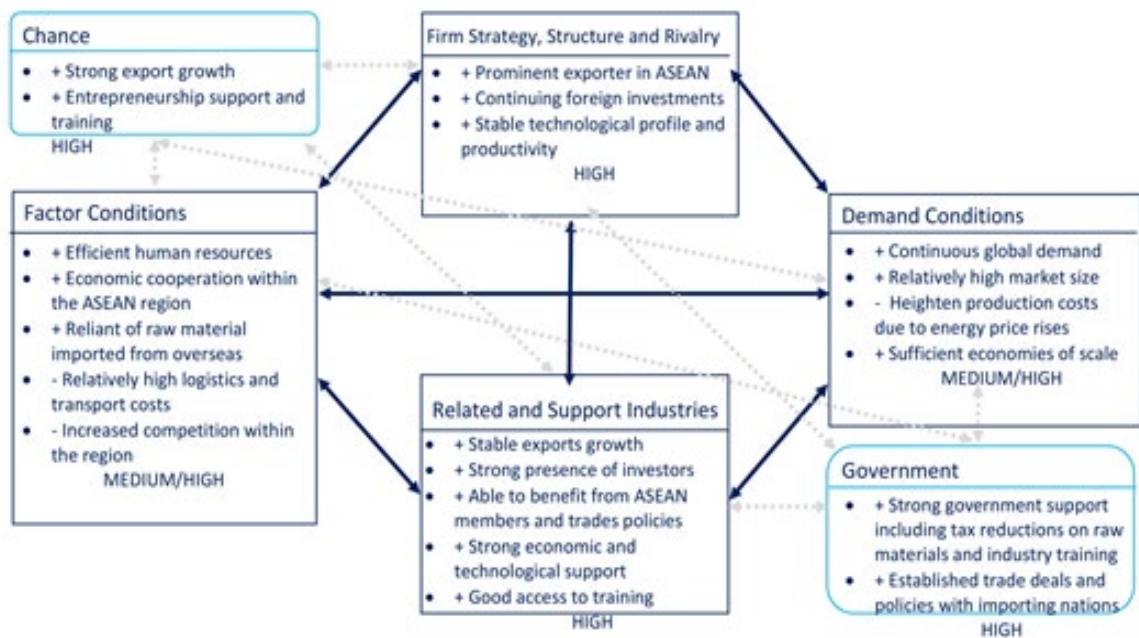
Cambodia is a relatively attractive investment destination thanks to its lower labor costs in comparison to most ASEAN nations. Additionally, Cambodia's competitive advantage lies in its openness to and favored treatment for foreign investment (Investment Europe, 2017). The textile and apparel manufacturing sector, however, faces an ongoing concern pertaining to poor working conditions and well-being of factory workers. As a result, a number of multinational enterprises such as Nike, Puma, Asics and Adidas are working collaboratively with external bodies to improve health and safety standards of factories in Cambodia.

The country is well integrated into global textile and apparel supply chains. Despite this, the country is experiencing a decline in export volumes as a result of strong competition in the ASEAN region and a rising concern regarding the occupational health and safety standards of the approximately 700,000 predominantly young female workers who are employed in the textile and apparel sector (WorkerHealth, 2017).

Figure 52: Potential for mobilizing cluster development (Indonesia)

**Potential for mobilizing cluster development:
a competitive advantage analysis using
Porter Diamond Model**

Indonesia



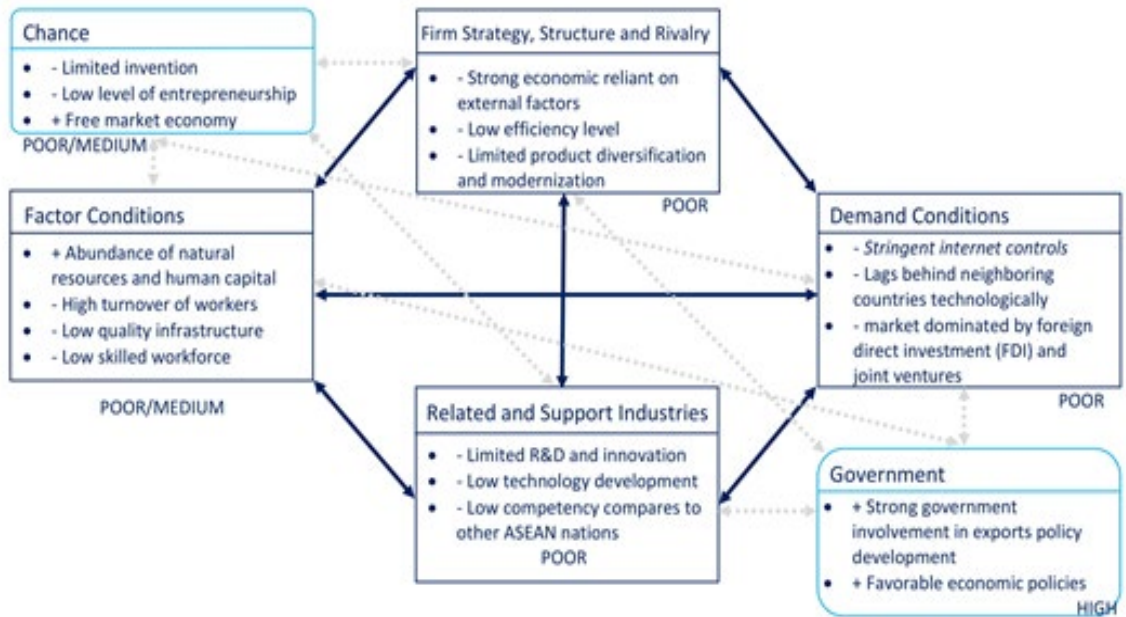
Like most ASEAN member states, Indonesia’s textile and apparel industry follows an Export-Oriented Industrialization (EOI) policy. The country is considered a prominent location for textile and apparel investment with strong export growth, rising foreign investment, and decent economic development and government support (Fair Wear Foundation, 2016). Moreover, Indonesia has a well-established trade relationship with major importing countries and offers supportive investment policies to investors, particularly regarding tax reductions on raw materials imports.

Nevertheless, an increase in competition from rivals such as Vietnam, which has a cost advantage and greater production efficiency, together with Indonesia’s dependence on raw material imports have led to the decline in export value in recent years from US\$12.74 billion in 2014 to US\$12.26 billion in 2015 and US\$11.87 billion in 2016 (Global Business Guide Indonesia, 2017).

Figure 53: Potential for mobilizing cluster development (Laos PDR)

Potential for mobilizing cluster development: a competitive advantage analysis using Porter Diamond Model

Lao PDR

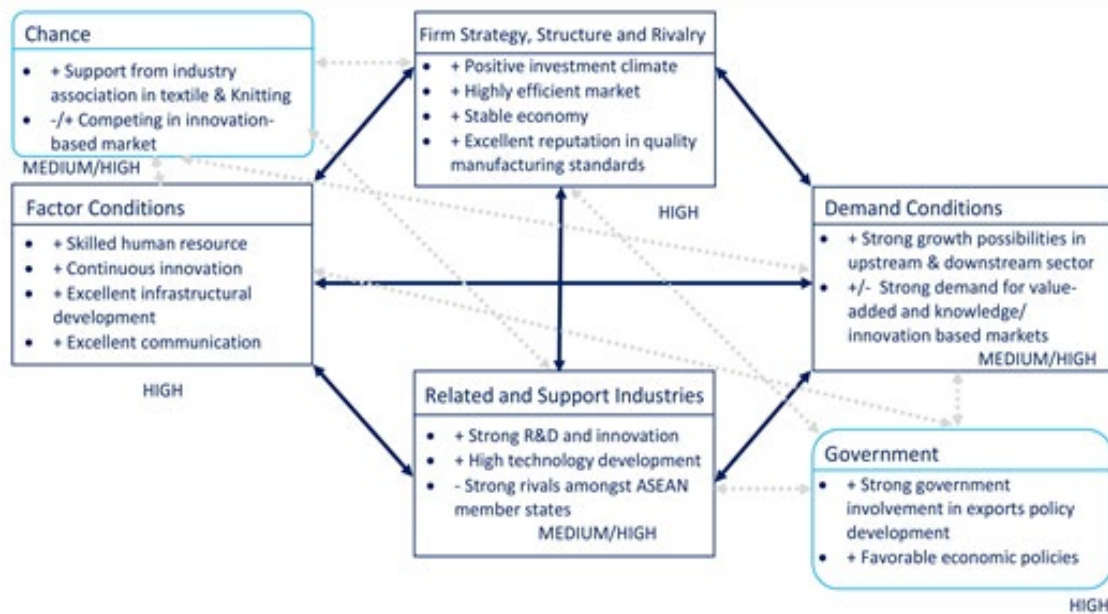


In terms of competitive advantage, Laos has abundant national resources and increasing foreign investments which have led to rapid economic growth. The country's major challenges continue to be a low-skilled workforce and low minimum wage which results in high turnover of workers and low worker productivity (UNDP, 2017; Thephavong, Lemsouthi, & Vilavong, 2005).

According to the United Nations Development Programme (UNDP), Laos has become more internationally oriented and is exporting higher value-added garments that contributed to a trade balance surplus of US\$111 million in 2015. The country has around 100 to 120 garment factories positioned around Vientiane and in the Savannakhet area (UNDP, 2017). Due to growing competition within the region, Laos may consider mobilizing clusters to manage its resources more effectively and improve product innovation and diversification to remain competitive.

Figure 54: Potential for mobilizing cluster development (Malaysia)

Potential for mobilizing cluster development: a competitive advantage analysis using Porter Diamond Model Malaysia



Malaysia's textile and apparel industry has shifted from labor-intensive production to high value-added manufacturing that encompasses knowledge-intensive and innovation-based manufacturing for products such as specialized apparel, technical textiles, and functional textiles (MITI, 2017).

Additionally, the Malaysian government plays an influential role in enhancing growth within the textile and apparel sector which has contributed to positive economic development, high quality education, well-developed infrastructure, and extensive transportation networks. The government's import and export policies have also contributed to a strong growth in both the upstream and downstream sectors. The Malaysian Textile Manufacturers Association (MTMA) and Ministry of International Trade and Industry envision that the textile sector will grow by a minimum of 30 percent with the implementation of the Trans-Pacific Partnership agreement (Knitting Industry, 2016).²⁶⁸

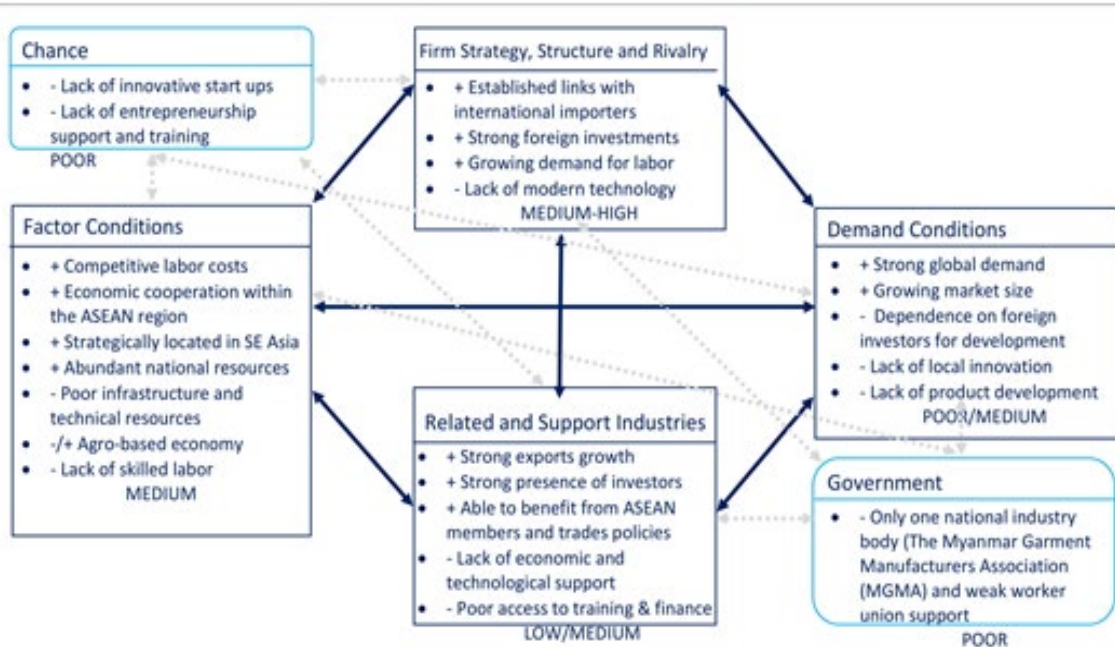
Moreover, Malaysia has highly favorable factor conditions that provide a competitive advantage, including skilled human resources, abundant natural resources, and highly-developed infrastructure.

²⁶⁸ Although the proposed trade agreement between Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, Vietnam, and United States was signed on 4 February 2016, it was not ratified as required and did not take effect.

Figure 55: Potential for mobilizing cluster development (Myanmar)

**Potential for mobilizing cluster development:
a competitive advantage analysis using
Porter Diamond Model**

Myanmar



Along with Laos and Cambodia, Myanmar is one of ASEAN’s smallest economies. Myanmar was under military rule until the country’s first non-military government in 54 years took office on 1 April 2016. This has resulted in Myanmar having an extremely low human capital ranking of 112 out of 124 nations, according to the World Economic Forum (ASIA Briefing, 2016).

Myanmar depends heavily on its basic factors of production; as a result, the country’s textile and apparel sector lacks skilled labor and the ability to innovate and adapt new technology. Nonetheless, Myanmar’s favorable labor costs and high level of government assistance and industry support in conjunction with an abundant supply of national resources have made Myanmar an attractive investment destination, particularly in the textile and apparel industry (CBI, 2018). The country exported US\$2.1 billion worth of garments in 2016. In the same year, its garment sector had a seven percent share of the country’s total exports and employed 340,000 workers, 90 percent of whom were women, most of them between the ages of 18 and 27. The Myanmar Garment Manufacturers Association (MGMA) reported the country’s largest markets in 2015–2016 to be Japan with a 33 percent share of its Cut-Make-Pack (CMP) product exports, followed by Europe and South Korea at 25 percent each, and the U.S. and China at 2.4 percent each.²⁶⁹

The unique selling points of Myanmar’s garment products are high quality of workmanship, due to years of experience in working for strict Japanese and Korean clients, and 100 percent QC control.²⁷⁰

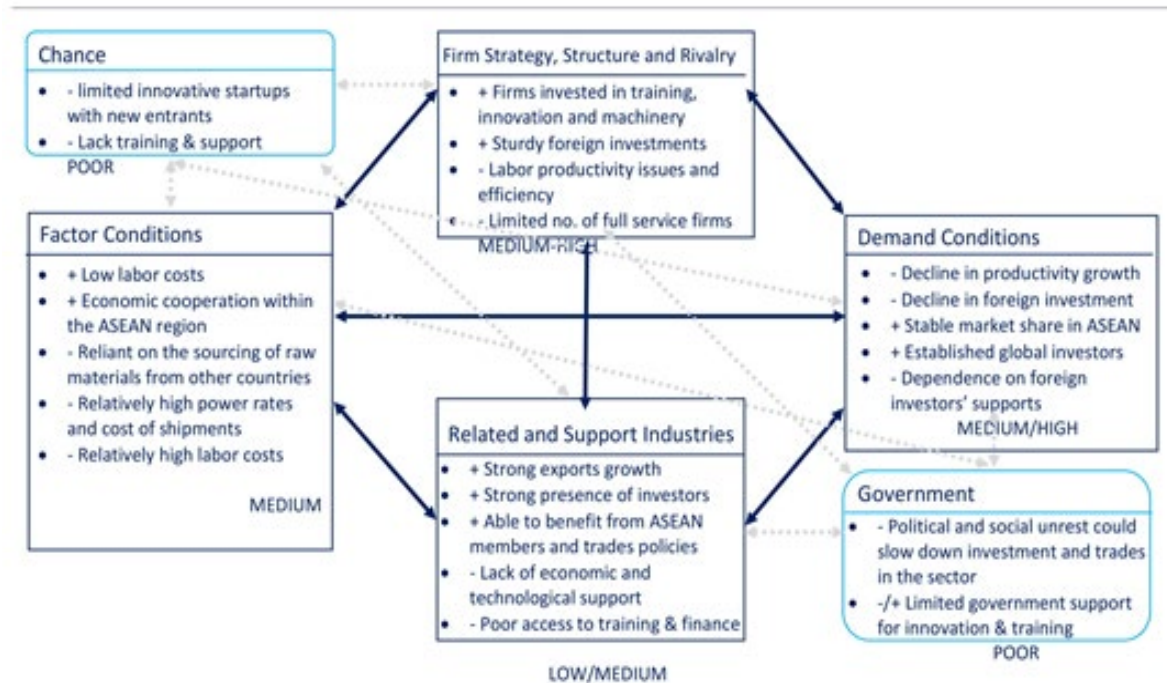
²⁶⁹ <https://www.cbi.eu/market-information/studies-for-importers/apparel-myanmar/>

²⁷⁰ <https://www.cbi.eu/market-information/studies-for-importers/apparel-myanmar/>

Figure 56: Potential for mobilizing cluster development (Philippines)

**Potential for mobilizing cluster development:
a competitive advantage analysis using
Porter Diamond Model**

Philippines



The Philippines' textile and apparel sector is considered a priority sector. The government has identified the necessity to develop strategic roadmaps as part of the country's comprehensive national industrial strategy with an aim to assess opportunities and growth to attract investments, promote job creation, and improve overall economic growth. The country's major exports market for textile and apparel are Japan, USA, China, South Korea, and Thailand (BOI, 2016).

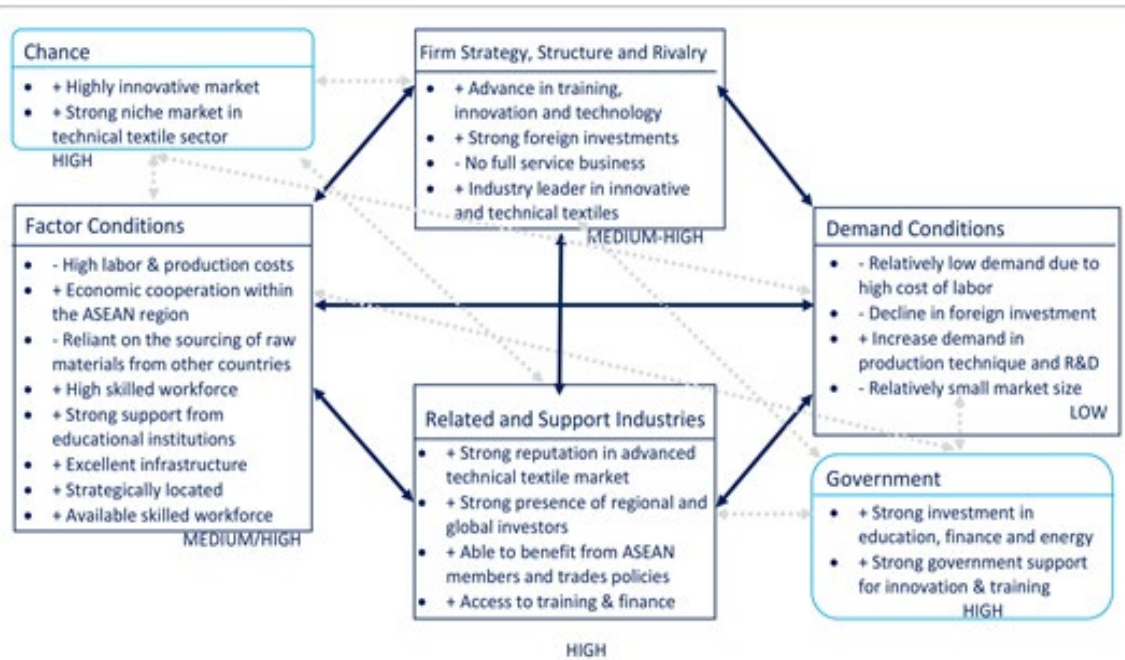
The factors that make the Philippines' competitive are its competent, English-speaking human resources and its abundance of labor. However, the Philippines' textile and apparel industry has experienced a continued decline since the 1990s. The average value of annual exports was US\$2.4 billion between 1995 and 2006, but dropped to US\$1.043 billion in 2010 (BOI, 2016).

To maintain competitiveness in the industry, the Philippines needs to differentiate itself and diversify from manufacturing local textiles to more advanced products such as technical textiles, functional textiles, or eco-friendly textiles (PTRI, 2015).

Figure 57: Potential for mobilizing cluster development (Singapore)

**Potential for mobilizing cluster development:
a competitive advantage analysis using
Porter Diamond Model**

Singapore



Singapore's textile and apparel industry is declining in terms of manufacturing output. However, Singapore continues to rank second behind Hong Kong as an Asia Pacific's sourcing hub, which has forced the industry to become innovative due to increased labor costs (ITA, 2016). There is no doubt that Singapore has established itself as a highly innovative market in the Asia-Pacific region with a strong niche in technical textile exports.

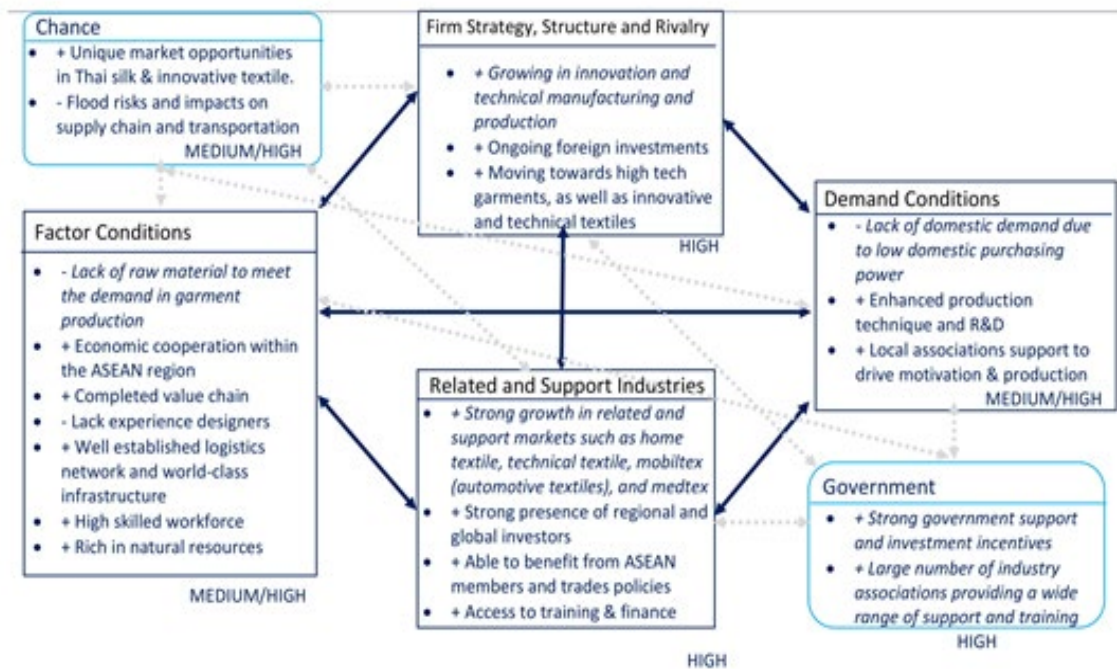
According to the World Economic Forum's Global Competitiveness Report 2017-2018, Singapore currently ranks third out of 137 countries worldwide as the most competitive nation, which makes Singapore the only ASEAN member state to make the top ten on the list (World Economic Forum, 2018). Additionally, the island nation ranks second among 190 economies for the ease of doing business, again the only ASEAN nation to make the top ten (ACRA, 2018).

In terms of factor conditions, Singapore is strategically located with a highly-skilled workforce and well-established infrastructure. Nevertheless, the country lacks the ability to offer a complete value chain in the textile and apparel sector due to its reliance on raw materials from other countries.

Figure 58: Potential for mobilizing cluster development (Thailand)

**Potential for mobilizing cluster development:
a competitive advantage analysis using
Porter Diamond Model**

Thailand



Upon analyzing Thailand’s textile and apparel sector, it is evident that Thailand not only has strong government support and attractive investment incentives, but that the country also has excellent trade fairs and exhibitions organized by industry associations, which are considered a favorable competitive condition in the sector.

With its strategic location in the heart of ASEAN and considerable ease of doing business, Thailand is considered one of the most competitive countries in the region, particularly with the government’s ongoing “Thailand 4.0” strategy aiming to push Thailand beyond the middle income trap by focusing on science, technology, innovation and creativity to create competitive advantages (BOI, 2017).

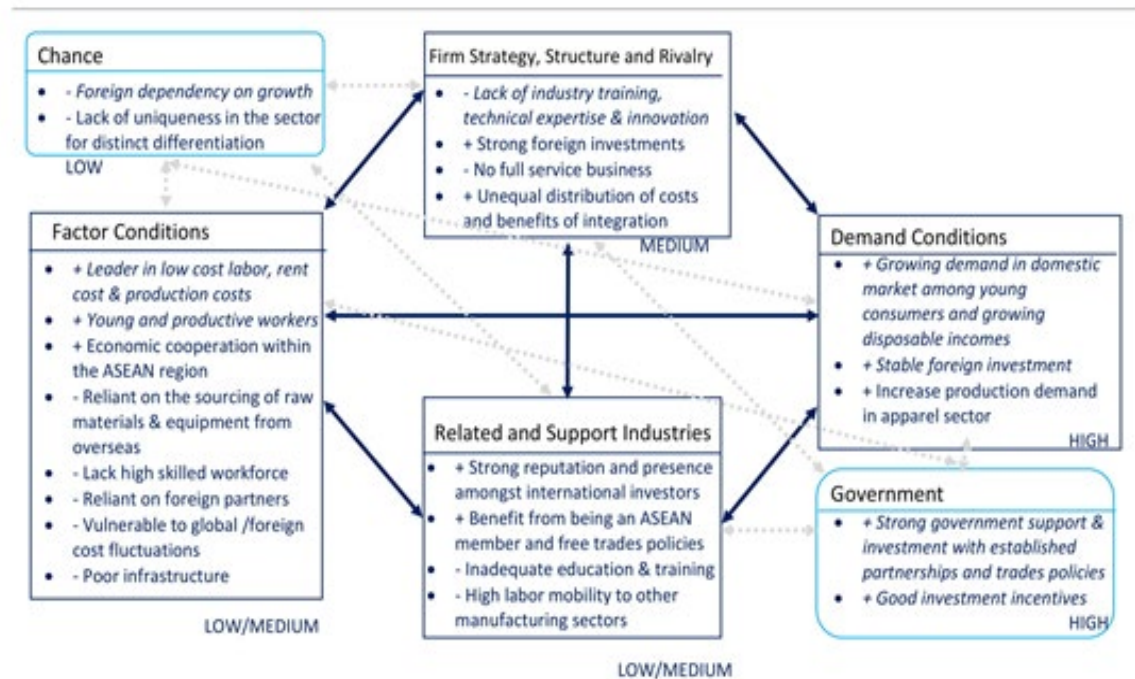
In terms of demand conditions, a good example is the “Style October 2018” textile exhibition organized by the Department of International Trade Promotion, Ministry of Commerce. The exhibition offers networking opportunities for businesses from CLMV countries to enhance knowledge sharing and the development of market opportunities (Style Bangkok Fair, 2018).

Furthermore, Thailand has strong potential to meet specialized demand and engage in unique market opportunities for specialized textiles. For example, Thailand has the potential to manufacture organic cotton textiles, high quality yarns, Thai silk—which can be made into anti-bacterial fabrics—and other technical and functional textiles such as Medtex for medical needs and Agrotex for the agricultural sector (BOI, 2016).

Figure 59: Potential for mobilizing cluster development (Vietnam)

**Potential for mobilizing cluster development:
a competitive advantage analysis using
Porter Diamond Model**

Vietnam



Vietnam's textile and apparel industry is one of the country's fastest growing sectors and is presently leading the region in garment exports. The industry enjoyed a 20 percent growth in 2016, attributable to the United States-Vietnam Bilateral Trade Agreement. The Agreement contributed significantly to increased foreign investment, economic growth, and increased garment exports, particularly to the U.S. and the EU (ITA, 2016).

Key factor conditions that limit the ease of doing business in Vietnam include relatively complex import and export licensing procedures and regulations, poor infrastructure, lack of technical expertise and innovation, lack of a highly-skilled workforce, and vulnerability to foreign exchange fluctuations (Vietnam Briefing, 2017).

On the other hand, Vietnam is one of the most popular destinations among multinational corporations due to its high growth and excellent export performance, which have contributed significantly to national socio-economic development (Huong, 2017).

4.9 POLICY RECOMMENDATIONS

- 1) **Focus on sustainable development** – The textile and apparel industry is one of the largest manufacturing industries for most Asian nations and has direct and indirect impacts on the environment, employment, trade, resources, and skills development (Switch Asia Programme, 2017). Considered as a polluting industry with complex production networks, the industry has faced ongoing challenges in effectively promoting sustainability in its supply chain operations (Shen, Li, Dong & Perry, 2017). ASEAN governments need to strictly enforce the industry's compliance with relevant laws in order to protect the environmental and resources and ensure the industry can be developed sustainably.
- 2) **Enhance productivity** – Productivity improvements need to focus on efficiency rather than work intensity. This is becoming one of the most prominent issues in the textile and apparel industry, where excessive working hours of more than 48 hours a week are common in Cambodia, Laos, and Vietnam (ILO, 2016). While the ASEAN governments need to implement continuous worker skill improvement programs to improve competencies and productivity, it is also crucial that they set appropriate employment standards and guidelines for textile and garment manufacturers to comply with and strictly enforce compliance in order to reduce negative impacts on human rights and protect the rights of workers.
- 3) **Improve working conditions** – A large number of workers in less-developed countries in Asia work in the textile and apparel sector under poor working conditions as international brands seek low labor costs and high productivity (Europa, 2014). However, these two factors usually do not come together. Low labor costs are normally associated with low-skilled labor, which generally has low productivity, while skilled workers that can deliver high productivity demand higher pay.

In partnership with the International Labor Organization (ILO), Indonesia, Cambodia and Vietnam participate in the “better work” program to boost competitiveness and maximize productivity by addressing labor practices and eliminating mistreatments (Better Work, 2018).

Programs such as this should be implemented across ASEAN to encourage enterprises to promote fair working conditions, comply with relevant codes of conduct, and establish training programs and advisory services to monitor and maintain compliance with labor standards.

- 4) **Build competitiveness through regional collaboration** – To build regional competitive advantage, it is particularly important that ASEAN countries collaborate to build a strong regional supply network based on each country's strengths, similar to the AFTEX's SAFSA program. Rather than competing within the region, it can be more productive for ASEAN countries to work together in providing a full service production base to global buyers whereby the AMSs that are strong in textile production, such as Indonesia, Thailand and Malaysia, supply textiles to those countries strong in garment making, such as Vietnam, Cambodia and Myanmar, to meet the needs of global buyers. This way, specialization can be created and regional competitiveness can be built wherein textile countries can focus their resources on innovating and utilizing technology for developing textile products while garment countries can do the same to constantly improve productivity and value addition in garment manufacturing.

5. TOURISM INDUSTRY

5.1 INDUSTRY OVERVIEW

Tourism plays a very important role in ASEAN economies. In 2015, the sector contributed 12.4 percent to ASEAN's total GDP, which was higher than the world average of 9.8 percent and the Asian average of 8.5 percent. Many factors have contributed to this significant share, including ASEAN's heritage and numerous attractions, improved tourist facilities, and affordable connectivity. Through the ASEAN regional cooperation framework, the ASEAN Tourism Ministers Meeting (M-ATM), and the Sub-Committee on Tourism (SCOT) under the ASEAN Committee on Trade and Tourism, ASEAN tourism ministers and business leaders in the tourism industry have been working together to accelerate sustainable tourism development in the region and promote ASEAN as a single destination to attract more visitors from around the world. ASEAN Member States (AMEs) have addressed their respective tourism policies and promotional activities in various ways:

- 1) Brunei is planning to double the number of tourist arrivals (by air) from 218,000 in 2015 to 450,000 tourists by 2020. The strategy is to market its natural and cultural attractions and develop new ones such as bird watching, diving, summer school, kite festivals, fruit festivals and others.
- 2) Cambodia will host its next Travel Mart in October 2018 in the capital, Phnom Penh. The venue will be the Diamond Island Convention and Exhibition Centre, the centerpiece of a strategy to help Cambodia attract more MICE events and enhance the attraction of iconic cultural destinations such as Angkor Wat.
- 3) Indonesia is promoting Visit Wonderful Indonesia (Viwi) in 2018 with a year-long celebration of 3A elements (Attraction, Amenity, and Accessibility), hot deals, packages, colorful festivals, and digital destinations. More than 200 events are being held nationwide in the fields of culture, arts and entertainment, business, sports, education and science.
- 4) Lao PDR is promoting Visit Laos Year 2018. It includes dozens of activities and events nationwide as well as overseas. ASEAN's only landlocked country is boosting cross-border linkages with five neighboring countries, including China. It allows visa exemption for 25 countries. Of the country's 27 international checkpoints, 25 also have visa-on-arrival facilities.
- 5) Malaysia will host the PATA Travel Mart 2018 in Langkawi. The fifth UNWTO World Tourism Conference will be held in Malaysia in 2019. A Visit Malaysia Year has been designated for 2020. Malaysia will be the destination partner of the European Travel Agents and Tour Operators Association Conference in 2018 and the ITB Berlin, a major global tourism trade fair and exhibition, in 2019.
- 6) Myanmar is forecasting 7.2 million visitors by 2020, nearly double the 3.14 million arrivals in 2017, thanks to growing international air and land connectivity and more new destinations and hotels. Bagan will be submitted to UNESCO for world heritage status. A significant expansion of countries to grant visa-free and visa-on-arrival conditions is planned.
- 7) The Philippines has launched a number of strategic campaigns and travel events such as the Bring Home a Friend Program, Madrid Fusion Manila, World Street Food Congress, and Dive Fiesta Philippines. As an island nation, it is expanding its air connectivity to various beach destinations such as Boracay, Palawan, and Cebu.
- 8) Thailand has launched the Amazing Thailand Tourism Year 2018 promotion focusing on seven distinct categories: sports tourism, gastronomy tourism, maritime tourism, wedding and honeymoon tourism, medical and wellness tourism, community-based tourism, and leisure destinations. The Amazing Thailand Tourism Year 2018 campaign aims to further strengthen the Thai tourism industry's competitiveness while also building environmental awareness among key tourism industry stakeholders nationwide. This will make it more sustainable, with a focus on quality tourism that generates higher economic value for Thai citizens and distributes tourism income to more destinations around Thailand.

- 9) Singapore has launched a New Brand campaign slogan, Passion Made Possible. The Singapore Tourism Board has become the first National Tourist Organization (NTO) in ASEAN to partner with the Disney entertainment conglomerate. In addition to hosting the F1 World Championships till 2021, it will be the first ASEAN country to host a leg of the International Champions Cup football trophy between 2017-2021.
- 10) Vietnam is promoting Visit Vietnam Year in 2018. It will be the host of the next ASEAN Tourism Forum in January 2019 in Ha Long Bay. E-visa privileges for citizens of 46 countries and visa exemption for 22 countries have helped Vietnam hit 13 million international visitors in 2017, up 30 percent over 2016.

Sustainable development of tourism-sector businesses is vital not only to economic development but also as a vehicle for investments in the physical and electronic infrastructure and amenities required by modern tourists. Additionally, such development also needs to address environmental issues and ensure sustainable utilization of natural resources used to earn tourism revenue.

Tourism represents an important component of the economies of all AMSs, especially in Cambodia, Lao PDR, Malaysia, the Philippines, and Thailand, where tourism accounts for more than 10 percent of GDP and contributes to significant employment in each country. According to the World Travel and Tourism Council (WTTC), in 2013 AMSs generated US\$112.6 billion in tourism foreign exchange earnings and US\$294.4 billion in value-added linkages to travel and tour operations, shopping, entertainment, transportation, and various other tourism-related service occupations and productive sectors, accounting for 12.30 percent of regional GDP.

ASEAN tourism products generally focus on cultural tourism and heritage, nature-based leisure tourism, ecotourism, community-based tourism, and cruise and river-based tourism.

5.2 GLOBAL TOURISM LANDSCAPE

The global travel and tourism industry was valued at US\$7,581 billion in 2014 (10.0% of global GDP) and was projected to grow by 3.8 percent in 2015. The industry is further envisioned to witness a year-on-year (Y-O-Y) growth rate of 3.9 percent and reach US\$11,382 billion (10.6% of global GDP) by 2025 (Attractions Management, 2017).²⁷¹

The revenue generated from visitors is also projected to surge from US\$1,384 billion in 2014 to US\$2,141 billion in 2025, exhibiting a CAGR of 4.0 percent. Total investment in the global travel and tourism sector is anticipated to swell from US\$814 billion in 2014 at a year-on-year growth rate of 4.7 percent to reach US\$1,336 billion in 2025 (Clad News, 2017).²⁷²

The Asia-Pacific tourism industry accounts for approximately 9.4 percent of GDP of the region and is envisioned to witness the highest growth over the period from 2015 to 2021. The tourism market in the Asia-Pacific region is likely to be propelled by strengthening economies, rising disposable income, and increasing infrastructural developments in some of the major destination countries such as India, China, Japan, and Singapore. Backed up by these factors, the Asia-Pacific region is projected to attract over 502 million visitors in 2020 (Research Nester, 2018).²⁷³

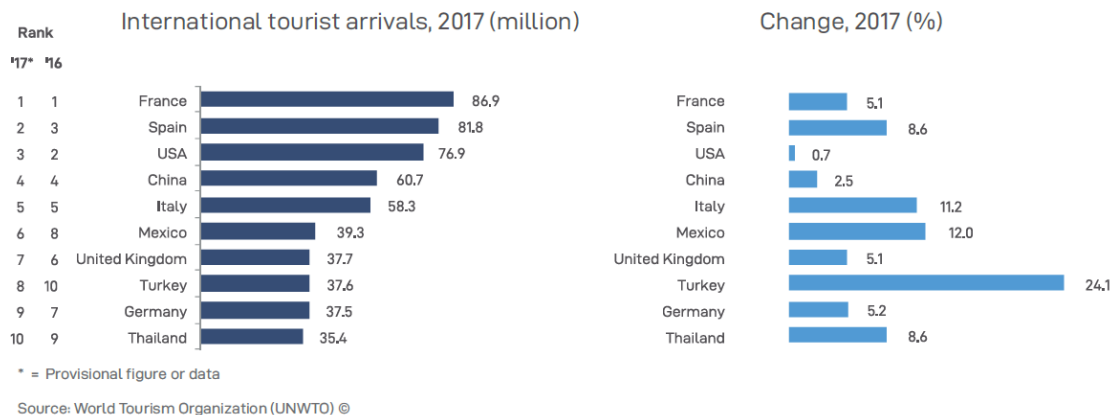
The world ranking of international tourist arrivals (Figure 60) is dominated by two European destinations, France and Spain, that attracted 86.9 million and 81.8 million international tourist arrivals, respectively, in 2017, followed by the U.S. at 75.9 million. The top ten list features two Asian destinations, China (4th), with 60.7 million international tourist arrivals, and Thailand, (10th) with 35.4 million.

²⁷¹ <http://www.attractionsmanagement.com/index.cfm?pagetype=news&subject=news&codeID=329795>

²⁷² <http://www.cladglobal.com/CLADnews/architecture-design/Global-tourism-market-tourism-global-tourism-visitor-attractions-development-tourism-development-/329795>

²⁷³ <https://www.researchnester.com/reports/global-tourism-industry-market-analysis-opportunity-outlook-2025/109>

Figure 60: International tourist arrivals, 2017



Source: World Tourism Organization (UNWTO)

According to a Pacific Asia Travel Association (PATA)'s report, by the end of 2021 the 39 Asia-Pacific destinations are predicted to host an aggregate volume of almost 760 million foreign visitors. Asia will welcome three-quarters of that volume in 2021 with the Americas seeing close to 21 percent and the Pacific close to four percent. The dominance of Asia is not surprising, given that the fastest growing destination sub-regions between 2016 and 2021 are all in Asia with South Asia growing at an average rate of 7.5 percent per annum, Southeast Asia at 6.6 percent per annum, and Northeast Asia at 5.5 percent per annum (PATA, 2017).²⁷⁴

5.3 ASEAN TOURISM LANDSCAPE

Since ASEAN economic integration in 2015, tourism leaders from all 10 ASEAN countries have begun to promote the region as a single-market tourist destination, attracting more than 100 million international visitors to the region annually.

ASEAN as a region attracted 105 million international visitor arrivals in 2014 (see Figure 57). ASEAN also benefited from a significant increase in the region's share of global and Asia-Pacific regional international visitor arrivals and tourism receipts from 2010 to 2014, shown in Figure 58. UNWTO data indicate that leisure travel is the main purpose of travel for 56 percent of international tourist arrivals in the Asia-Pacific region, followed by visiting friends and relatives at 26 percent and business at 16 percent.

²⁷⁴ <https://www.pata.org/executive-summary-asia-pacific-visitor-forecast-2017-2021/>

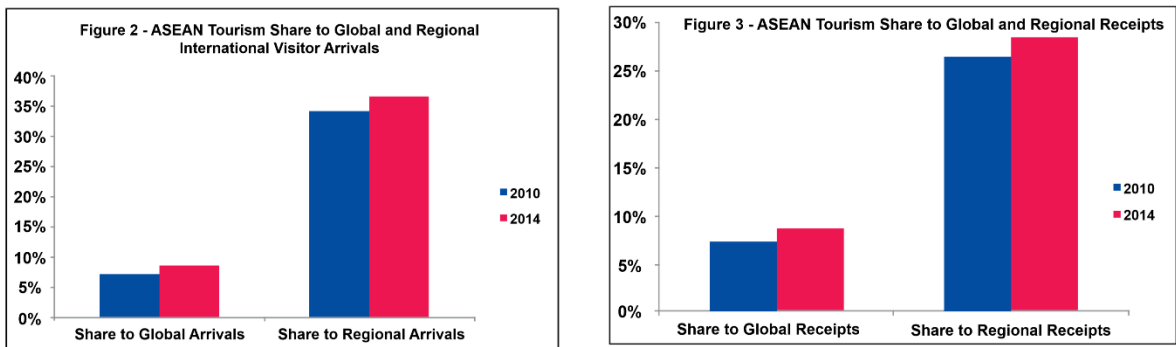
Figure 61: International Visitor Arrivals to ASEAN



*Data from 2001 to 2012 reflect arrivals by air only for Brunei Darussalam

Source: ASEAN Secretariat

Figure 62: ASEAN tourism share to global and regional international visitor arrivals & receipts



Source: UNWTO, 2015.

According to the UNWTO, total international arrivals to ASEAN are expected to increase to 123 million by 2020, 152 million by 2025, and 187 million by 2030. At the ASEAN Foreign Minister's Retreat held in Hua Hin, Thailand, on August 20, 2013, to consider the post-2015 vision, the Ministers set ASEAN's overall goal to be moving from just sustaining economic growth towards an economic growth that is "inclusive," "green," and "knowledge-based." The tourism sector was seen as a leading contributor towards the overall post-2015 ASEAN vision.

Based on comparative data for 2010, the Greater Mekong Sub-region (GMS) was the largest of three sub-regional groups for international arrivals in ASEAN, accounting for 45.9 percent of total international arrivals, generating US\$39.7 billion in visitor receipts, contributing 12.1 percent of sub-regional GDP (about 35% of total ASEAN tourism GDP), and directly employing 3.31 million people

(50% - 70% women). While the share of ASEAN international arrivals by the BIMP-EAGA and the IMT-GT are relatively modest compared to the GMS group, their GDP shares were higher and the BIMP-EAGA group had the faster growth rate (ASEAN, 2015).²⁷⁵

The major source of international visitor arrivals is intra-ASEAN, accounting for 46 percent of total international visitor arrivals to ASEAN in 2014. The other major sources of international visitors were Asia (excluding ASEAN) at 30 percent, Europe (12%), Oceania (4%), and the U.S. (4%). The fastest growing markets for ASEAN between 2010 and 2013 were China (a 30.92% growth), Japan (+12.95%), South Korea (+10.49%), Taiwan (+9.14%), and Australia (+8.24%) (ASEAN, 2015).²⁷⁶

A forecast of International arrivals to Southeast Asia by region from the ASEAN Tourism Strategic Plan 2016-2025 projected that the Southeast Asian region will contribute the strongest growth in international arrivals of 5.8 percent annually from 2010-2020, followed by the Asia-Pacific region at 5.7 percent and the rest of the world at 3.8 percent (see Table 31).

Table 28: Forecasts of International Arrivals to Southeast Asia in 2020, 2025, and 2030

Region	Projected Growth in Arrivals		Actual		Projections	
	2010-2020	2020-2030	2013	2020	2025	2030
World	3.8%	2.9%	1,087	1,360	1,569	1,809
Asia and Pacific	5.7%	4.2%	248	355	436	535
Southeast Asia	5.8%	4.3%	102*	123	152	187

Source: ASEAN, 2012.

5.4 ASEAN'S COMPETITIVENESS

The ASEAN region boasts a wealth of natural and cultural heritage sites as well as a long tradition in tourism. It is also strategically located at the heart of Asia. The extraordinary diversity of the ASEAN countries further enhances the region's attractiveness. In addition, ASEAN is an affordable destination by international standards. Some highlights are as follows:

Natural Resources: ASEAN's rich culture is reflected in its wealth of ancient temples and churches, colonial houses and heritage sites, colorful festivals, and world-famous cuisines, all of which are a source of tourist fascination and investors' greatest assets.

Access to Talent: ASEAN peoples are known for their charm, hospitality, and, in many countries, English-proficiency. These are all workforce qualities that investors look for when establishing businesses in a service-driven sector such as tourism. Young and well-trained talent for hotels and restaurants, leisure and gaming, and culture and arts abound in ASEAN countries, ready to fill human resource needs for tourism investments.

Medical Tourism: Medical tourism is slowly becoming a niche area in ASEAN for travelers who visit the region to receive treatment and undergo medical procedures. Thailand has largely benefited from this market, welcoming 2 million medical tourists a year (IMTJ, 2010).²⁷⁷ In Singapore, 400,000 patients visit every year, bringing in a revenue of some US\$700 million (Sodonchimeg & Geng, 2017).²⁷⁸ The Philippines also promotes medical tourism by highlighting the quality of Filipino

²⁷⁵ <http://www.asean.org/storage/2012/05/ATSP-2016-2025.pdf>

²⁷⁶ Ibid.

²⁷⁷ <https://www.imtj.com/news/thailand-boost-medical-tourism-2010/>

²⁷⁸ <http://www.ijbmer.com/docs/volumes/vol8issue2/ijbmer2017080205.pdf>

medical practitioners and through ongoing efforts from the country's top hospitals to upgrade their facilities and equipment.

The global competitiveness report reveals that ASEAN's natural and cultural heritage is one of its key competitive strengths. Nonetheless, ASEAN members are not at the same level of development in terms of infrastructure, business environments, regulatory frameworks, and human resources. Developing quality tourism destinations and products remains a major challenge for many ASEAN countries. The weak performances of less-developed Member States is reflected in the asymmetrical nature of the distribution of tourism flows within the region.

The challenge, therefore, is to raise the competitiveness of the tourism sector in the affected Member States to bring about a more inclusive distribution of benefits relative to factors such as population and resource capacity. Thus, the focus areas to address in order to raise competitiveness are marketing, product development, investments, service quality, human resources, connectivity and infrastructure, and travel facilitation.

5.5 SMES IN THE INDUSTRY

Tourism businesses in Southeast Asia can be categorized into six tourism-specific products from suppliers' perspective: 1. Accommodation services; 2. Food and beverage serving services; 3. Passenger transport services; 4. Travel agency, tour operator and tourism guide services; 5. Cultural services, recreation and other entertainment services; and 6. Miscellaneous tourism services (i.e., Personal care and camping sites, zoos, museums, and theme parks) (UNWTO, 2011).²⁷⁹ The aforementioned is consistent with the World Travel and Tourism Council's report in 2018, the report states that there are five major tourism products, including, accommodation services, food & beverage services, retail trade, transportation service, cultural, sport, recreational service²⁸⁰. SMEs can have a big influence on tourists' experience. Small and medium-sized businesses can represent a destination's character and offer personalized services to capture a niche market. Tourism SMEs are valuable contributors to the social fabric of a community. They can be an important source of innovation in an increasingly competitive industry. Based on the study done by Mazumder et al., (2012), reveals that small and medium enterprises has played a pivotal role in ASEAN tourism industry, especially integrating remote business and developing linkages with other sector²⁸¹.

5.6 INDUSTRY TRENDS

New technologies are changing the industry. With changing consumer behaviors and the introduction of new business models come new technologies. Innovating and exploring ways to leverage technology to drive growth will continue to be a topic of interest among tourism entrepreneurs and executives in the coming years.

There are a number of trends, both emerging and long standing, in visitor motivation and behavior that must be taken into account in developing a successful ASEAN marketing strategy. These trends include experiential travel, inclusive tourism, and a long-standing trend of sustainable tourism. It is advisable that ASEAN states be mindful of these trends and work with the industry to ensure tourism business practices in the region take care of the environment and the wellbeing of local communities while earning profits.

²⁷⁹ http://statistics.unwto.org/sites/all/files/pdf/unwto_tsa_1.pdf

²⁸⁰ <https://www.wttc.org/-/media/files/reports/economic-impact-research/regions-2018/southeastasia2018.pdf>

²⁸¹ <http://www.tnc-online.net/pic/20150207115011975.pdf>

Experiential travel or immersion travel is a form of tourism in which people focus on experiencing a country, city, or particular place by connecting to its history, people and culture.²⁸² The Lonely Planet presented some illustrative examples of experiential travel in its article, “Chocolate-making, sunrise yoga and street food safaris: experiential travel is on the rise for 2017.”²⁸³ This article discussed chocolate-making in Saint Lucia, sunrise yoga on a sandbank in the Maldives, street food safaris in Vietnam, and classes in local cooking in South Africa.

Inclusive tourism or accessible tourism is a form of tourism that addresses tourism and travel provisions for customers with specific access requirements – people with a temporary injury, chronic illness or disability, the elderly, families with children, and so on.

According to the Rainforest Alliance, sustainable tourism businesses support environmental conservation, social development, and local economies. Such companies take concrete actions to enhance the wellbeing of local communities and make positive contributions to the conservation of natural and cultural heritage. Examples of sustainable business practices include conserving water and energy, supporting community conservation projects, recycling and treating waste, hiring staff from the local community, paying fair wages and providing training, and sourcing locally-produced products for restaurants and gift shops.²⁸⁴

Social media platforms are increasingly being used as powerful marketing and promotional tools to lower costs for tourism businesses and enable them to attract customers at a fraction of the budget that would be required if traditional advertising media, such as newspapers, magazines or TV advertising, were to be used. In addition, the popularity of online reservation platforms for flights, hotels, and car rentals, such as Hotels.com, Orbitz.com, Expedia.com, Agoda.com, Booking.com and many others, have made travel planning and execution much more convenient and cheaper for travelers as well as increased opportunities for businesses to reach a larger number of customers.

5.7 INDUSTRY DEMOGRAPHY

Attracting, retaining, and developing qualified talent at all levels remain big challenges in the travel and tourism industry. Businesses and education providers must take a more strategic approach to talent and leadership development, especially when the addition of millennials and the younger Gen Z to the talent pool. Additional consideration for management and HR departments must be taken into account, as these younger generations, especially Gen Z, have distinctive characteristics that require special attention, including being digital natives, health-conscious, privacy conscious, entrepreneurial, worried about their future prospects, possessive of a strong sense of self-identity, and determined to succeed.²⁸⁵

Women represent at least half of ASEAN’s tourism industry workers and hold 60 percent or more of hospitality-related tourism jobs in Thailand, the Philippines, and Vietnam. Gender profile by job type varies considerably, with the majority of women employed in lower-skilled jobs paying lower wages. Observations in all ASEAN countries indicate that men tend to secure a higher proportion of managerial positions in government and private sector tourism enterprises. In Thailand, 66 percent of hotel and restaurant workers were women and the percentage of women employed as housekeepers in Lao PDR’s accommodation subsector is nearly 100 percent. Notwithstanding lower wages and gender-biased pay rates that favor males, remittances from low and semi-skilled tourism workers are an important source of supplementary income for rural households. A study in

²⁸² https://www.nytimes.com/2012/07/08/nyregion/your-home-the-new-frontier-for-tourists-in-new-york-city.html?_r=0/

²⁸³ <https://www.lonelyplanet.com/news/2017/02/22/experiential-travel-rise-2017/>

²⁸⁴ <https://www.rainforest-alliance.org/faqs/difference-between-eco-tourism-green-sustainable-travel>

²⁸⁵ <https://www.oxford-royale.co.uk/articles/7-unique-characteristics-generation-z.html>

Cambodia found over 75 percent of both men and women working in Siem Reap and Phnom Penh hotels remit wages that amount to over US\$1.2 million per month (ASEAN, 2015).²⁸⁶

5.8 ASEAN COOPERATION

In order to enhance the competitiveness of ASEAN as a single tourist destination, ASEAN governments need to address the following key areas: 1) Intensify the promotion and marketing of ASEAN through its Southeast Asia as a single destination campaign, 2) Diversify ASEAN tourism products, 3) Attract tourism investments, 4) Raise capacity and capability of tourism human capital, 5) Implement and expand standards for facilities, services, and destinations, 6) Improve and expand intra-regional connectivity and destination infrastructure, and 7) Enhance travel facilitation services.

To achieve regional competitiveness in the tourism industry, AMSs have agreed to enhance cooperation in areas such as investment policy, tourism development planning, human resources development, and environmental and cultural preservation in order to achieve continued and long-term viability of the industry. To realize these shared objectives, ASEAN has formulated five strategies and corresponding actions;²⁸⁷

- 1) Strategy 1: Marketing the ASEAN region as a single tourist destination with multi-faceted attractions and world class standards and facilities
- 2) Strategy 2: Encouraging Tourism Investments under a More Competitive Regime
- 3) Strategy 3: Developing a Critical Pool of Tourism Manpower
- 4) Strategy 4: Promoting Environmentally Sustainable Tourism
- 5) Strategy 5: Facilitating Seamless Intra-ASEAN Travel

It will be in the best interest of each AMS to fulfill their obligations and carry out their share of responsibilities in the regional plan to realize the dream of ASEAN as an attractive single destination.

5.9 INDUSTRY CHALLENGES

To improve international tourists' experience when visiting the ASEAN region, there is a need for ASEAN governments to improve regional cooperation and harmonization in such areas as licensing, policy, and relevant laws and regulations. With the freer flow of products, services, labor, and investment envisioned in the creation of the ASEAN Economic Community (AEC), it is becoming more necessary that AMSs coordinate their regulations and standardization of tourism products and services to ensure positive experiences for international tourists.

Another substantial obstacle for ASEAN tourism businesses is access to information. Such information includes consumer preferences and behavior of different tourist categories and markets, which is necessary for tourism SMEs and entrepreneurs to cater their products and services to meet the market's needs and enable them to capture a fair share of the market.

It is not easy for SMEs to succeed in global value chains, and there are two main factors that require attention. The first is enterprise competitiveness and the second is enterprise connectivity, or the means by which firms can connect to value chains. Given that these value chains can take various forms, SMEs can internationalize by supplying to or partnering with larger firms in the same country or by creating trade and supply linkages with buyers in other countries. Enterprises that are both competitive and connected will be able to link into, and benefit from, global value chains. However,

²⁸⁶ <http://www.asean.org/storage/2012/05/ATSP-2016-2025.pdf>

²⁸⁷ https://asean.org/?static_post=plan-of-action-on-asean-cooperation-in-tourism

many small and informal SMEs often find it difficult to do so. Cluster mobilization can be a viable approach for ASEAN to create such linkages and provide opportunities for these small and micro firms to connect and compete in partnership with larger firms in the same clusters.

Another factor for success in value chain integration is skilled labor, a key ingredient for achieving high productivity and efficiency as well as product and service quality. While it is a government's direct responsibility to build a strong labor pool that has the necessary skills to match industry needs, participation in business clusters can also strengthen tourism businesses' competency and competitiveness through natural collaboration that provides daily on-the-job training for the human capital in the cluster.

5.10 GOVERNMENT POLICY

The tourism industry is a very dynamic and competitive industry. To maintain ASEAN's competitive advantage in the sector, the ASEAN governments need to create an attractive atmosphere for tourism investments and operations by eradicating hindrances to tourism development and creating an appropriate regulatory framework that is both supportive of investments and protects the environment and natural resources.

Without the governments taking the lead in making sure that relevant laws and regulations are supportive of tourism investment and development while also mindful of environmental and resource protection, it will be difficult to attract quality investments in the sector while also ensuring that the country's environment and natural resources are not deliberately ruined for the sake of revenue and profits.

On the other hand, while quality investment in the tourism industry should be encouraged to bring development to the sector, local small entrepreneurs should not be neglected. Popular tourist destinations naturally attract investors to take advantage of the booming business environment and increasing number of tourists. It is very common to see investments in tourism facilities and services by investors from outside the areas—local, national, and/or foreign investors. Local small entrepreneurs cannot match these investors' financial power and resources and need to be aided by the government to ensure their businesses can find their own competitive niches. On the flip side, these small businesses as well as local "outsider" investors are often found to be polluters that destroy natural resources and the environment for quick money, making it necessary for the government to strictly enforce relevant protection laws and regulations to make all tourism investments sustainable.

In order to improve the quality of tourism products and services and promote responsible management among tourism businesses and stakeholders in the region, ASEAN has created seven tourism standards under the purview of ASEAN National Tourism Organizations as follows:²⁸⁸

- 1) ASEAN Green Hotel Standard
- 2) ASEAN Spa Services Standard
- 3) ASEAN Clean Tourist City Standard
- 4) ASEAN Community-Based Tourism Standard
- 5) ASEAN Homestay Standard
- 6) ASEAN Public Toilet Standard
- 7) ASEAN MICE Venue Standard



²⁸⁸ http://asean.org/storage/2012/05/19037_ATF2018_Directory_610118.pdf

5.11 CLUSTER MOBILIZING

It will be advantageous to the ASEAN tourism industry to employ the cluster strategy in developing regional tourism in order to compete in the highly competitive global tourism space. Although some AMSs, such as Thailand, are already ranked among the world's top tourism destinations, these countries and their ASEAN neighbors have a lot to gain if they work together to attract international tourists as a region and promote multiple destinations in the region. ASEAN can leverage popular cities to spread tourists to secondary destinations both in the same and neighboring countries, and in a multiple-destination cluster strategy in order to spread income and development around the region and further support ASEAN integration.

Figure 63: SWOT Analysis for Southeast Asia as a Destination

Strengths	Weaknesses
<p>Overall</p> <ul style="list-style-type: none"> Steady tourism growth year on year, with a positive outlook for the next few years. Intra-regional visa formalities for all travelers from Southeast Asia. A high resilience to major natural or made-man disruptions. Within ASEAN, there is high recognition of the importance of tourism as a development tool. Short flight times for intra-regional travel. Strong socio-economic development in the region spurring future regional travel demand. Generally good MICE facilities across parts of the region. <p>Marketing</p> <ul style="list-style-type: none"> Most of the destinations in Southeast Asia are well established and known destinations. Seasonality patterns are similar and are conducive to multi-country tour patterns. <p>Tourism Experience</p> <ul style="list-style-type: none"> Highly developed entertainment options: shopping, nightlife activities, food, and other cultural activities; unique cultural and natural destinations. Diverse cultural heritage with vibrant traditions. Highly desired cuisine and unique culinary experiences. Numerous UNESCO World Heritage Sites. Diversified tourism experiences from vibrant gateway cities to secondary destinations and beach front destinations. 	<p>Marketing</p> <ul style="list-style-type: none"> Low ASEAN brand recognition. Lack of a strong digital marketing strategy. Inadequate data collection mechanisms. Duplication of product offerings and marketing efforts between countries and regional groupings. No visible ROI mechanisms for validating marketing efforts. No apparent advocacy program for satisfied visitors. No highly visible brand ambassadors. Reputation management not yet seen as a relevant issue. <p>Tourism Experience</p> <ul style="list-style-type: none"> Visa formalities for some of the member countries present international travelers with a difficult travel experience given that the one visa policy has still not been implemented. Variable service quality standards and offerings. Large disparity between destinations' levels of tourism and quality (different levels of inbound and outbound market maturity). Poor infrastructure in some countries. Poor ICT in some countries. Some member countries still focus on visitor arrival numbers, with less attention to tourism yields and dispersion. Poor CIQ procedures especially at peak periods - airports at capacity. Poor intra-country transport options (taxi etc.) Lack of a service mindset across suppliers to the tourism sector. <p>Business Environment</p> <ul style="list-style-type: none"> Insufficient human resource development. Lack of cooperation with other government departments, i.e. immigration, transportation, infrastructure, etc. Some countries have cumbersome bureaucracies obtaining decisions from individual countries can be time-consuming and not conducive to agility in decision-making.

Opportunities	Threats
<p>Marketing</p> <ul style="list-style-type: none"> ● Reinvigorating the “Feel the Warmth” tagline and logo to better reflect the uniqueness and quality of Southeast Asia. ● Capitalizing on the emerging markets (e.g. Central/ East Europe). ● Greater interest in exotic destinations. <p>Tourism Connectivity and Infrastructure</p> <ul style="list-style-type: none"> ● Expansion of low-cost air carriers. ● Improved connectivity throughout Southeast Asia. ● Strong regional travel and development partner opportunities. ● Use of visa policy to stimulate source market entry at various ports. 	<p>Overall</p> <ul style="list-style-type: none"> ● Safety and security issues. ● Political instability. ● Economic downturns. ● Possible pandemics with resultant negative travel advisories. ● Rising cost for long-haul travel. ● Currency fluctuations. ● Overcrowding and insufficient management of core attractions. <p>Marketing</p> <ul style="list-style-type: none"> ● Overcrowding and insufficient management of core attractions. ● Confusion of the many regional groupings with potential competition. ● Changing demographics and motivations for travel, such as shorter, more frequent vacations. ● Single source market dominance. Competition from other destinations/regional groupings in other parts of the world.
<p>UNESCO = United Nations Educational, Scientific and Cultural Organization, GMS = Greater Mekong Subregion, ASEAN = Association of the Southeast Asian Nations, ICT = information and communication technologies, ROI = return on investment, CIQ = China Inspection and Quarantine, MICE = meetings, incentives, conventions and exhibitions. Source: PATA Strategic Intelligence Centre; Experience Mekong GMS Tourism Marketing Strategy and Action Plans 2015-2020</p>	

Source: ASEAN Tourism Marketing Strategy (ATMS) 2017-2020

In a SWOT analysis of ASEAN as a tourism destination in the ASEAN Tourism Marketing Strategy 2017-2020 (see Figure above),²⁸⁹ it is clear that some of the region’s strengths—short flight times for intra-regional travel, seasonality patterns that are similar and advantageous for multi-country tours, highly desired cuisine and unique culinary experiences, and diversified tourism experiences, from vibrant gateway cities to secondary destinations and beach front destinations— are conducive to multi-destination marketing promotion. ASEAN can certainly utilize the cluster strategy to promote joint regional destinations. To do so, ASEAN governments will need to overcome the weaknesses identified in the SWOT analysis, such as lack of a strong digital marketing strategy, duplication of product offerings and marketing efforts between countries and regional groupings, variable service quality standards, and the focus by some member countries on visitor arrival numbers instead of tourism yields and dispersion, amongst others.

The ASEAN tourism industries in the 10 member countries are analyzed below using Porter’s Diamond model on their potential for mobilizing cluster development to increase industry competitiveness.

²⁸⁹ http://asean.org/storage/2012/05/ASEAN_Tourism_Marketing_Strategy_2017-2020.pdf

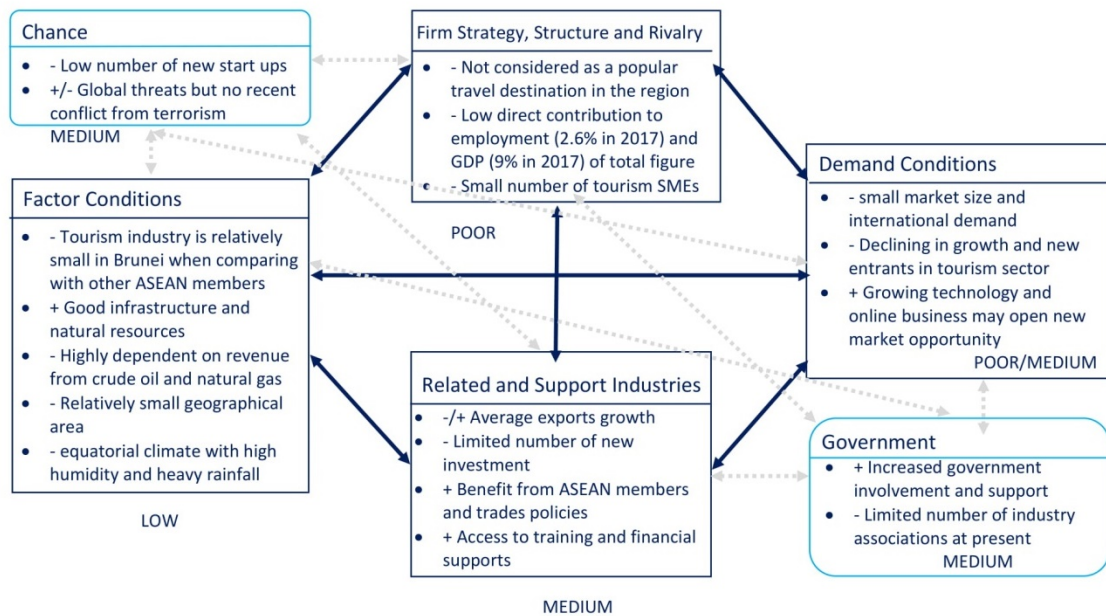
Brunei Darussalam

Whilst Brunei may not be as competitive as their ASEAN neighbors as a travel destination due to limited new investment and declining growth in its tourism sector, the government of Brunei has a plan to provide training and other necessary support to the industry. The tourism sector, therefore, is expected to grow in line with the growth of the travel and tourism industry in the region, especially in such niche markets such as ecotourism, cycling, and bird watching (The Economist, 2017).²⁹⁰

Figure 64: Potential for mobilizing cluster development (Brunei)

Potential for mobilizing cluster development: a competitive advantage analysis using Porter Diamond Model

Brunei



²⁹⁰ <http://country.eiu.com/article.aspx?articleid=1385037122&Country=Brunei&topic=Economy>

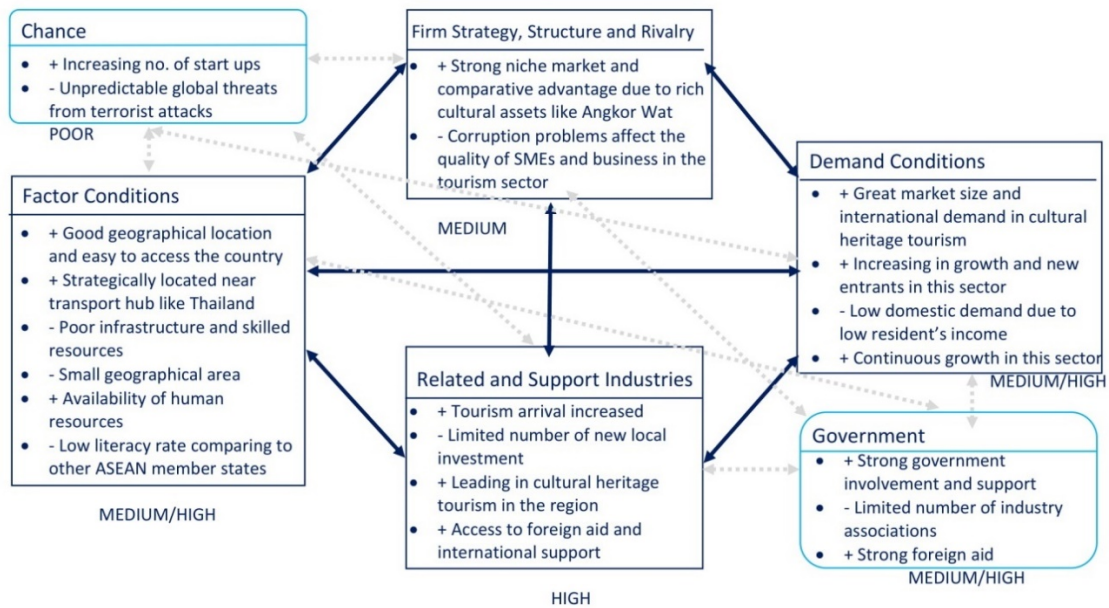
Cambodia

Cambodia is well located and is easily accessible from neighboring countries. Although the country is facing a number of poor factor conditions such as a low literacy rate and inadequate infrastructure, Cambodia has strong government support in the industry and is seeing increasing tourism demand from international markets, especially from Chinese tourists. Additionally, Cambodia has seen success through comparative advantages in some niche markets, notably in the cultural and heritage tourism sectors (ASEAN tourism, 2018²⁹¹; Tourism Cambodia, 2018²⁹²).

Figure 65: Potential for mobilizing cluster development (Cambodia)

Potential for mobilizing cluster development: a competitive advantage analysis using Porter Diamond Model

Cambodia



²⁹¹ <http://www.aseantourism.travel/explore/subs/cambodia-cultural-heritage-tourism>

²⁹² <https://www.tourismcambodia.com/attractions/angkor/angkor-wat.htm>

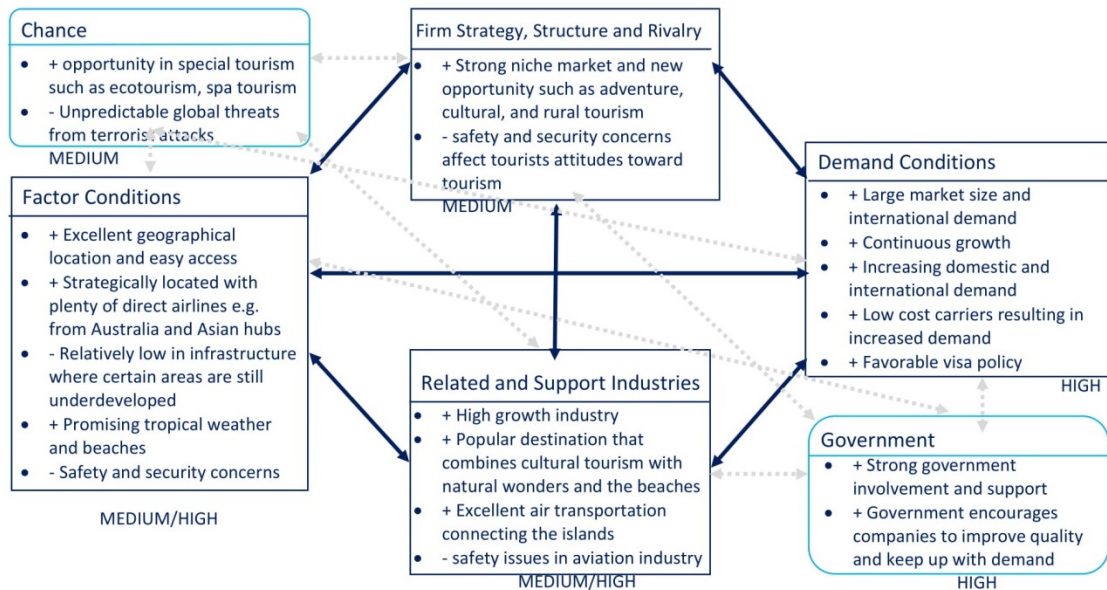
Indonesia

Indonesia is enjoying increased international demand and continuous growth in its tourism industry due partly to strong government support and competitive niche markets. The country is highly regionally competitive in cultural and rural tourism (Ministry of Tourism, Republic of Indonesia, 2018).²⁹³ Bali remains a popular destination amongst travelers from Australia and ASEAN countries. Nonetheless, like many developing countries in the region, Indonesia still needs further development in its infrastructure and to address a number of issues concerning tourist safety and security that could discourage some travelers from visiting Indonesia (Indonesia Investments, 2017).²⁹⁴

Figure 66: Potential for mobilizing cluster development (Indonesia)

Potential for mobilizing cluster development: a competitive advantage analysis using Porter Diamond Model

Indonesia



²⁹³ <https://www.indonesia.travel/tw/en/destinations/village-tourism>

²⁹⁴ World Economic Forum (WEF)'s Global Competitiveness Report 2015-2016

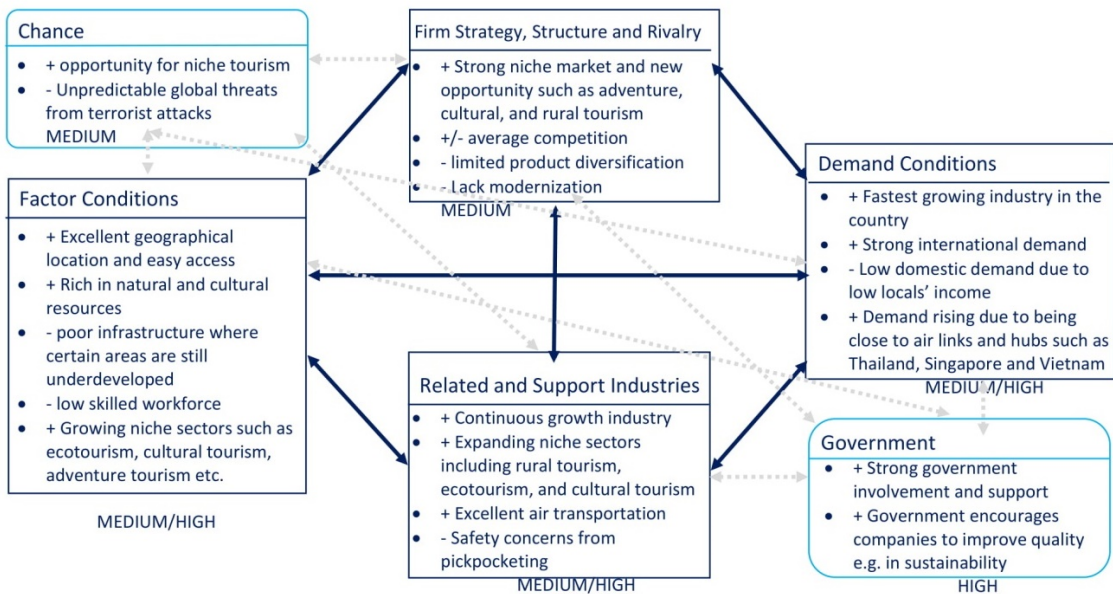
Laos PDR

Similar to Cambodia and Myanmar, Laos PDR is expecting a strong growth in niche tourism markets such as cultural and rural tourism (Tourism Laos, 2018).²⁹⁵ There is also continuous growth in related and supporting industries with strong government involvement and support. A low-skilled workforce and inadequate infrastructure remain two key areas that require improvement to raise the country's competitiveness in the tourism industry (EMC, 2017).²⁹⁶

Figure 67: Potential for mobilizing cluster development (Laos PDR)

Potential for mobilizing cluster development: a competitive advantage analysis using Porter Diamond Model

Lao PDR



²⁹⁵ http://www.tourismlaos.org/show.php?Cont_ID=5

²⁹⁶ <http://www.emergingmarkets.asia/consulting/news/2017/09/23/lao-pdr-labor-shortage/>

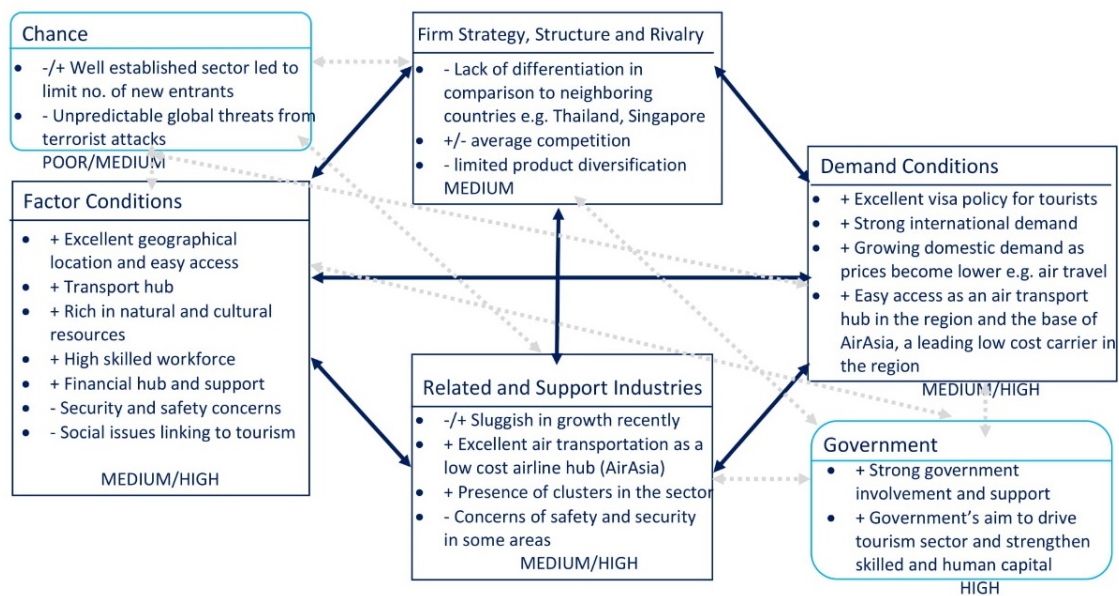
Malaysia

Malaysia's tourism industry is well established and is seeing growing demand from both international and domestic markets. The country has well-developed infrastructure and is easy to access from around the region. Malaysia is a regional flight hub and expects to reach almost 60 million annual passengers arrivals in 2018 (TRX, 2018).²⁹⁷ Air Asia, the Malaysia-based, low-cost airline, is well established in the ASEAN region flying to major cities around Asia and the Middle East. The Malaysian government provides strong support to drive industry competitiveness and tourism demand and encourage business clusters in the travel and tourism industry.

Figure 68: Potential for mobilizing cluster development (Malaysia)

Potential for mobilizing cluster development: a competitive advantage analysis using Porter Diamond Model

Malaysia



²⁹⁷ <http://trx.my/city/kuala-lumpur%E2%80%99s-aviation-hub-status-driven-by-low-cost-travel>

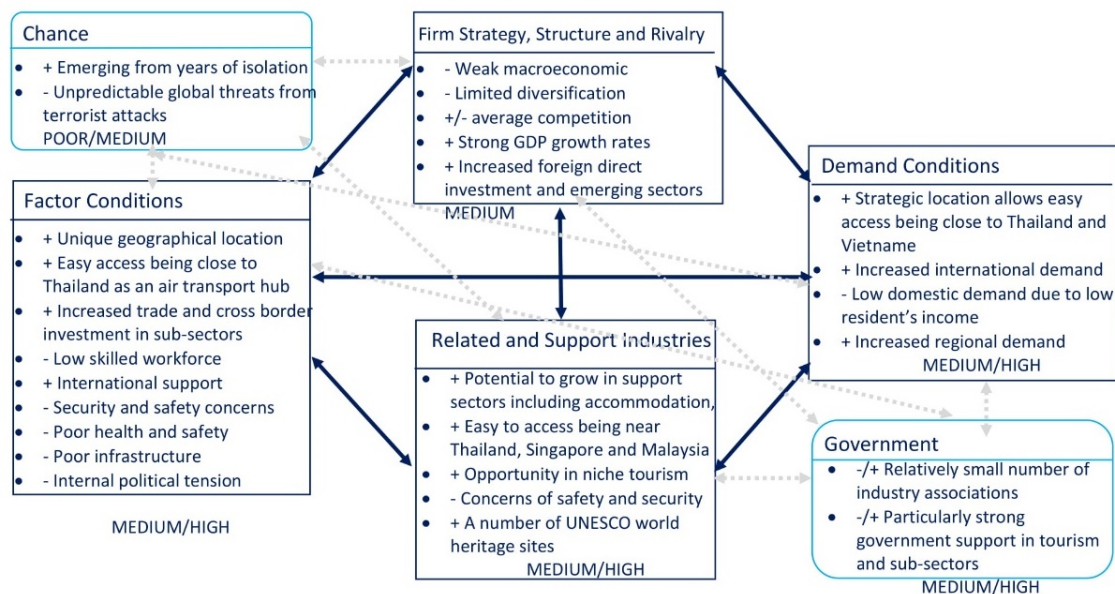
Myanmar

Myanmar benefits from a geographic location that supports easy access from Thailand and other ASEAN hubs. Nevertheless, Myanmar's low-skilled workforce, security and safety concerns, and poor health and sanitary care are some key factor conditions that limit growth in the tourism sector (Government of Canada, 2018²⁹⁸; Safe Travel, 2018²⁹⁹; & Travel.State.Gov, 2018³⁰⁰). Additionally, Myanmar's domestic demand is fairly limited due to the country's relatively high poverty rate of 26 percent.³⁰¹ With government support and increased investment in the sector, Myanmar has a strong potential to grow, particularly in niche tourism markets such as ecotourism, heritage and festival tourism, cruising, ballooning, volunteering, and meditation tours (Ministry of Hotels and Tourism, Myanmar, 2013).³⁰²

Figure 69: Potential for mobilizing cluster development (Myanmar)

Potential for mobilizing cluster development: a competitive advantage analysis using Porter Diamond Model

Myanmar



²⁹⁸ <https://travel.gc.ca/destinations/burma-myanmar>

²⁹⁹ <https://www.safetravel.govt.nz/myanmar>

³⁰⁰ <https://travel.state.gov/content/travel/en/international-travel/International-Travel-Country-Information-Pages/Burma.html>

³⁰¹ <http://www.mm.undp.org/content/myanmar/en/home/countryinfo.html>

³⁰² <https://www.tourism.gov.mm/wp-content/uploads/2017/06/myanmar-tourism-master-plan-english-version.pdf>

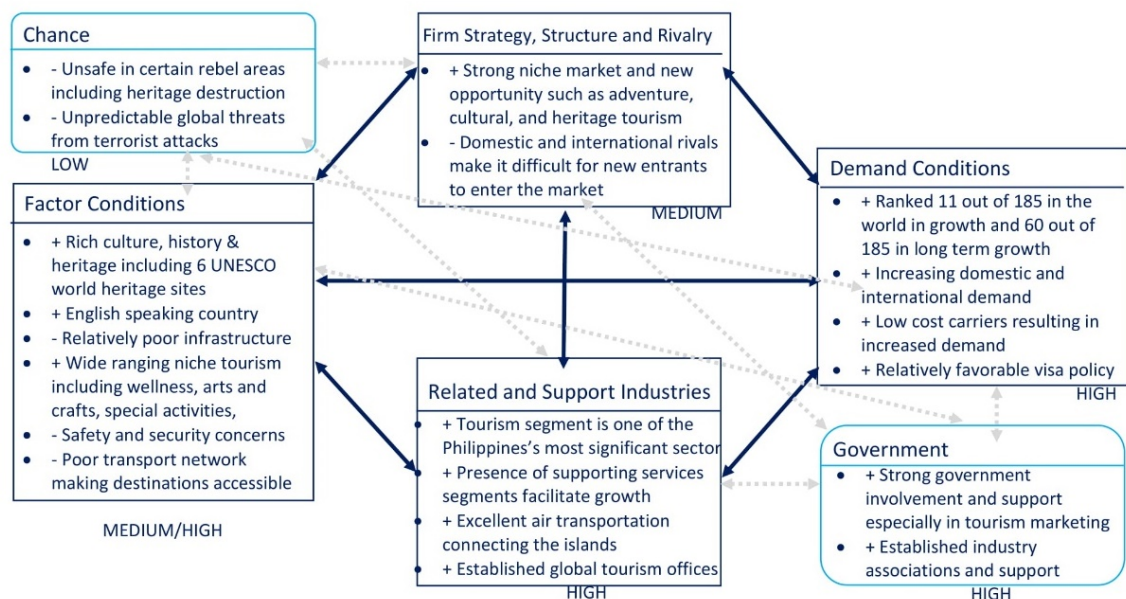
The Philippines

Conditions such as strong competition from regional destinations, regular natural disasters such as typhoons, and the ongoing conflict in Mindanao may have limited the growth of the Philippines' tourism industry sector. Nonetheless, the Philippines does have comparative advantages in a wide range of niche tourism sectors, including nature and ecotourism, festivals and events, cruising, and urban tourism. Additionally, being one of a few English-speaking countries in the region make the Philippines an attractive destination in the regional tourism industry (Philippine Tourism, 2018).³⁰³ Currently, the country is experiencing increased domestic and international demand as well as long term growth (WTTC, 2017).³⁰⁴

Figure 70: Potential for mobilizing cluster development (The Philippines)

Potential for mobilizing cluster development: a competitive advantage analysis using Porter Diamond Model

Philippines



³⁰³ http://www.tourism.gov.ph/product_dev.aspx

³⁰⁴ <https://www.wttc.org/-/media/files/reports/economic-impact-research/countries-2017/philippines2017.pdf>

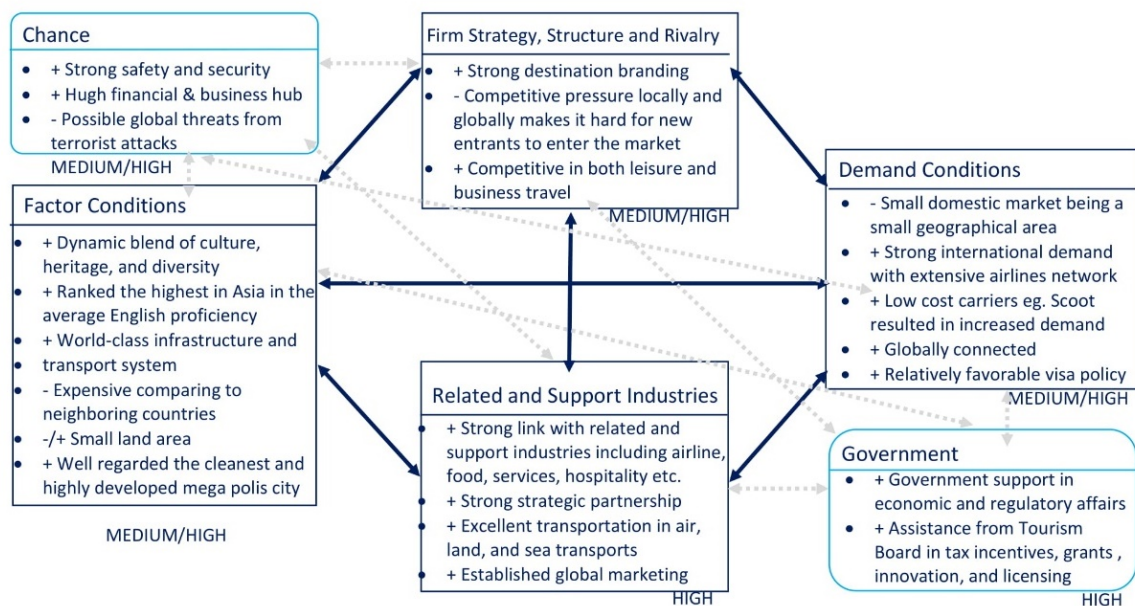
Singapore

Singapore continues to enjoy its status as the region's leading travel destination. Singapore's tourism industry is supported by strong related and supporting industries like the aviation industry, which helped the country's total travel and tourism exports expand 188 percent between 1997 and 2016 (WTTC, 2017).³⁰⁵ The Singapore government and tourism board also provide assistance, including tax incentives, grants, and licensing to SMEs in the sector. Moreover, whilst the country is small in land area, Singapore is well regarded as one of the safest and cleanest cities in the world and its advanced educational institutions, infrastructure, and transportation system are difficult to match by its regional competitors (Safe Around, 2018).³⁰⁶

Figure 71: Potential for mobilizing cluster development (Singapore)

Potential for mobilizing cluster development: a competitive advantage analysis using Porter Diamond Model

Singapore



³⁰⁵ <https://www.wttc.org/-/media/files/reports/benchmark-reports/country-reports-2017/singapore.pdf>

³⁰⁶ <https://safearound.com/asia/singapore/>

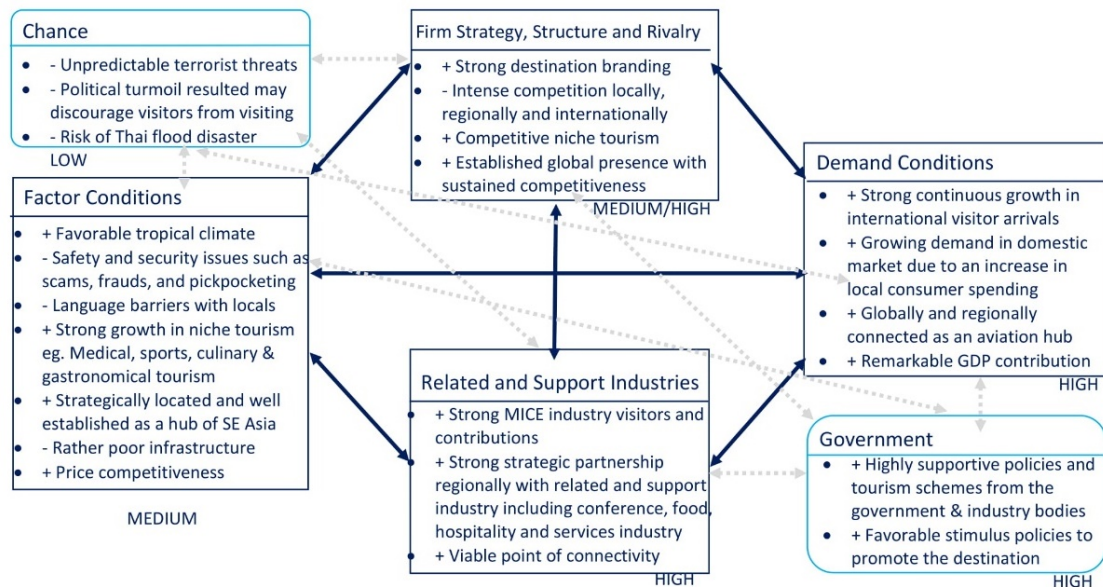
Thailand

Thailand is one of the fastest-growing travel destinations in the region (WTTC, 2018).³⁰⁷ With its price competitiveness, strategic location, tourism segmentation, and growing niche tourism markets—especially medical, sports, culinary, and gastronomic tourism—Thailand’s tourism market is well established globally and is seeing growing demand in both domestic and international markets (Ministry of Tourism and Sports, Thailand, 2017³⁰⁸; TAT News, 2018³⁰⁹).

Figure 72: Potential for mobilizing cluster development (Thailand)

Potential for mobilizing cluster development: a competitive advantage analysis using Porter Diamond Model

Thailand



³⁰⁷ <https://www.wttc.org/-/media/files/reports/economic-impact-research/countries-2018/thailand2018.pdf>

³⁰⁸ <https://www.austchamthailand.com/resources/Documents/Event%20Presentations/Tourism%20Plan%202018%20Nov.15,%202017.pdf>

³⁰⁹ <https://www.tatnews.org/gastronomy-tourism-agenda-to-be-advanced-in-asean-and-asia-pacific-regions/>

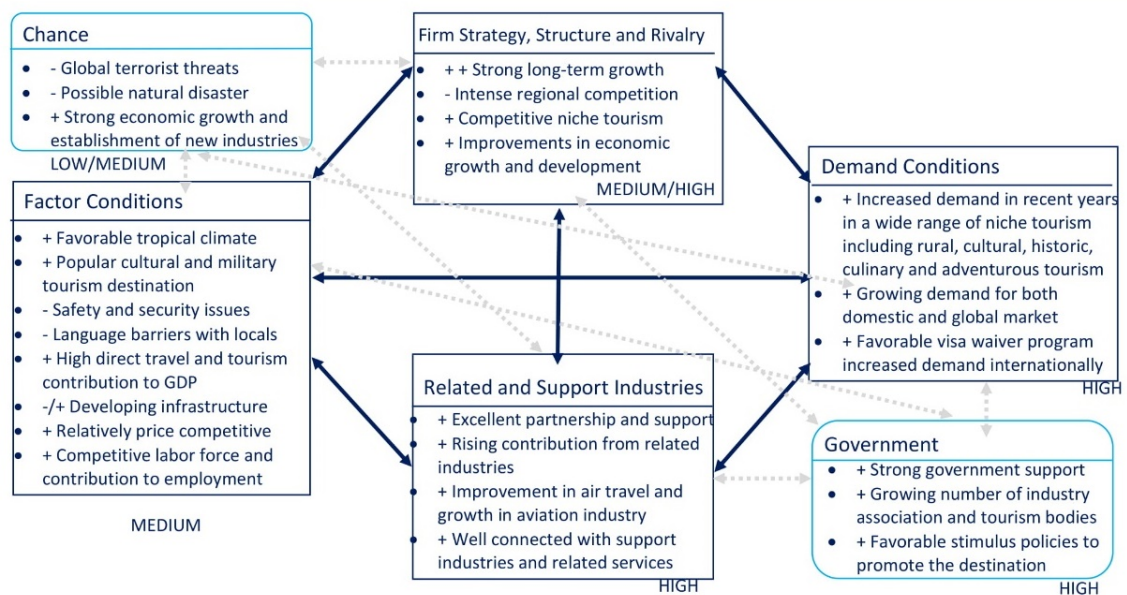
Vietnam

Like most of Vietnam's fastest-growing industries, the tourism sector is well connected with related and supporting industries and receives strong support from the government. Vietnam is experiencing strong economic growth with increased demand from international visitors in line with the country's strong export performance in recent years (WTTC, 2018).³¹⁰ Vietnam's tourism industry is expected to continue to grow, especially in niche markets such as Community-Based Tourism (CBT), due to the country's overall economic development.³¹¹

Figure 73: Potential for mobilizing cluster development (Vietnam)

Potential for mobilizing cluster development: a competitive advantage analysis using Porter Diamond Model

Vietnam



³¹⁰ <https://www.wttc.org/-/media/files/reports/economic-impact-research/countries-2018/vietnam2018.pdf>

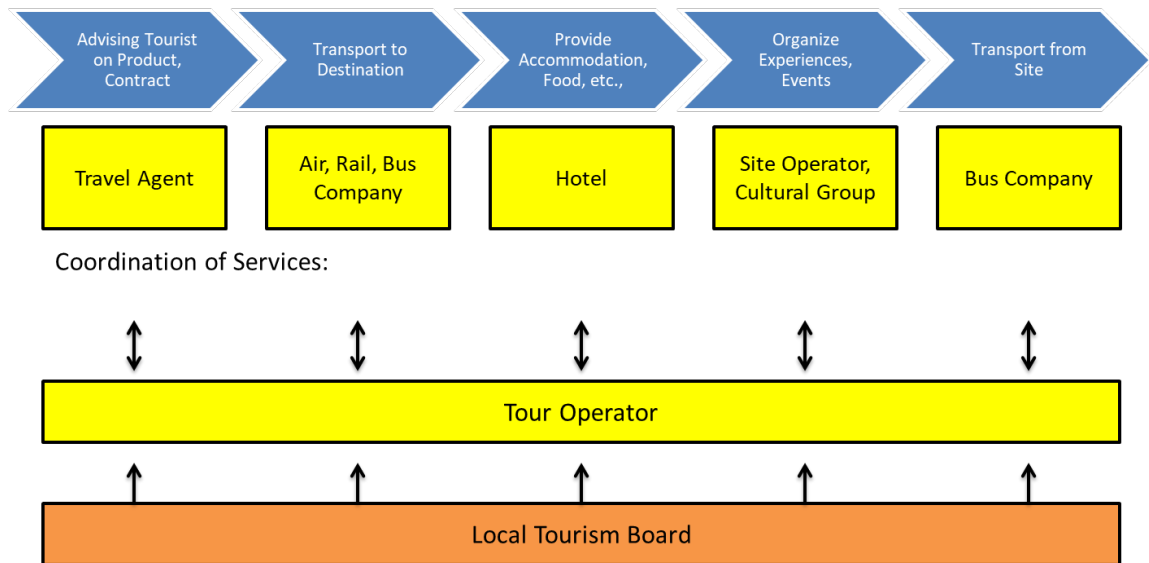
³¹¹ http://www.mesopartner.com/en/publications/?jumpurl=uploads%2Fmedia%2FRapid_Market_Assessment_Vietnam_2017.pdf&juSecure=1&locationData=75%3Att_news%3A383&juHash=72663c4c85751e383762a05e13a02d3d3d412560

5.12 INDUSTRY LINKAGES

Participating in and moving up global value chains (GVCs) is an important strategic direction for ASEAN as it moves towards achieving the AEC Blueprint 2025 with the characteristics of “a highly integrated and cohesive economy” and “a competitive, innovative and dynamic ASEAN.” A broader objective of becoming a highly-integrated and cohesive economy is to enhance the region’s participation in GVCs (AEC Blueprint 2025, para. 22) and increase ASEAN’s competitiveness and productivity (AEC Blueprint 2025, para. 25).

Tourism is a set of integrated services and activities, including transportation to and from sites, hotels and restaurants, travel agents and guides, site operators that organize events and provide experiences, supplies of goods and services used by tourists (souvenirs or financial services), and tour operators (see Figure 71 below). Some of these services are relatively capital intensive (air transportation, hotels, car rentals), and many are increasingly knowledge intensive. For these reasons, some ASEAN countries that lack capital, knowledge, or access to consumers or marketing networks have traditionally relied in part on FDI in tourism development. This is how many countries participate in global value chains. Value chains in this industry are complex, but because of tourism’s connectivity with other industries, its value chain can affect those industries. Inbound tourism (exports of services) and outbound tourism (imports of services) interplay through GVCs.³¹²

Figure 74: Value Chain of Tourism Industry



Source: International Trade Center (2013), What is a tourism value chain?³¹³

ASEAN countries formed a regional body called the ASEAN Tourism Association (ASEANTA) on 27 March 1971 to work on the development and promotion of tourism destinations, attractions, and supporting infrastructure in the ASEAN region. ASEANTA is comprised of members from both the public and private tourism sectors that include the National Tourism Associations from all 10 ASEAN countries, Hotel and Restaurant Associations, Airlines, and National Tourism

³¹² https://www.asean.or.jp/ja/wp-content/uploads/sites/2/2017/08/GVC-in-ASEAN_paper-1_-A-Regional-Perspective.pdf

³¹³ <https://traveltradepilippines-b2qohiebduuwgnjov0.netdna-ssl.com/wp-content/uploads/2013/03/tourism-value-chain.jpg>

Organizations (NTOs). ASEANTA should provide a regional platform in support of ASEAN governments' official channels, the ASEAN Tourism Ministers Meeting (M-ATM), to support regional linkages and enhance regional competitiveness in the tourism industry.

5.13 POLICY RECOMMENDATIONS

In order to keep in pace with the current situations and changing trends of the tourism industry, a number of policy recommendations can be proposed for ASEAN governments based on industry and market analysis:

- 1) **Promote ASEAN as a single destination** – Many ASEAN countries have been recognized as leading tourist destinations for their abundant natural attractions and cultural diversity. Rather than competing between themselves against the spirit of “ONE VISION, ONE IDENTITY, ONE COMMUNITY,” it will be more productive for ASEAN member states to continue to collaborate, combine their strengths, and intensify their effort to promote ASEAN as a single destination. A strategic plan to do so is already in place in the ASEAN Tourism Strategic Plan (ATSP) 2016-2025. ASEAN governments need to follow through on implementing the plan, building a common ASEAN Identity, creating a sense of belonging, consolidating unity in diversity, and enhancing deeper mutual understanding among AMSs about their culture, history, religion, and civilization while making the ASEAN tourism industry sustainable and beneficial to the citizens of ASEAN.
- 2) **Investing in human resource development** – ASEAN governments need to enhance and improve the capacity of human resources in the tourism industry through strategic programs to develop a qualified, competent, and well-prepared labor force that can serve the needs of the industry and bring quality experiences to visiting tourists.
- 3) **Bring benefits to local communities** – To make the ASEAN tourism industry prosperous and benefit tourism businesses, it is very important for ASEAN governments to ensure that the local environment is protected and the welfare of the local communities is taken care of. The governments need to strictly enforce relevant rules and regulations as well as control businesses' compliance with relevant industry standards to ensure that all parties benefit from tourism activities.
- 4) **Narrow development gap** – ASEAN countries need to strengthen regional cooperation to reduce the development gap and disparities in the region, especially between the ASEAN+6 and CLMV countries. ASEAN governments should consider mobilizing cross-border cluster approaches to bridge this development gap by leveraging the strengths of successful destination countries to aid less successful countries and share tourism benefits across the region.

BIBLIOGRAPHY

- Abdi, A. (Approver). (2014). Global Agricultural Information Network (GAIN) Report - Indonesia (Issue brief). USDA.
- Abernathy, F.H., Volpe, A., & Weil, D. (2006). The future of the apparel and textile industries: prospects and choices for public and private actors, *Environmental and Planning A: Economy and Space*, 38(12), 2207-2232.
- Agribusiness Country Diagnostic – Myanmar (Rep.). (2016). The World Bank. Agriculture Development Strategy to the year 2025 and Vision to the year 2030 (Publication). (2015). Lao People's Democratic Republic.
- Akter, A. (2018, February 3). Vietnamese textile and apparel industry moving towards US\$50 billion by 2020. Retrieved from <https://www.textiletoday.com.bd/vietnamese-textile-apparel-industry-moving-towards-us50-billion-2020/>
- Aldaba, R. M. (2008). SMEs in the Philippine Manufacturing Industry and Globalization: Meeting the Development Challenges. Retrieved from <https://www.econstor.eu/bitstream/10419/126740/1/pidsdps0815.pdf>
- Ambastha, M. (2018, April 12). Emerging ASEAN Economies – Impact on the garment industry. Retrieved from <http://stitchdiary.com/emerging-asean-economies/>
- Ang, P. A. (n.d.). Food and Agricultural Import Regulations and Standards - Philippines (Issue brief) (E. Purdy, Approver). USDA.
- ASEAN ECONOMIC COMMUNITY BLUEPRINT 2025. (n.d.). ASEAN.
- ASEAN Food Safety Developments Continued Harmonization Efforts (Working paper). (2016). EU-ASEAN Forum on Food Safety.
- ASEAN Integrated Food Security (AIFS) Framework and Strategic Plan of Action on Food Security in the ASEAN Region (SPA-FS) 2015-2020. ASEAN.
- ASEAN. (2018). ASEAN member states. Retrieved from <http://asean.org/asean/asean-member-states/>
- ASEAN. (2018). ASEAN Free Trade Area (AFTA Council). Retrieved from <http://asean.org/asean-economic-community/asean-free-trade-area-afta-council/>
- ASEAN Briefing. (2017, November 8). Cambodia's Garment Manufacturing Industry. Retrieved From <https://www.aseanbriefing.com/news/2017/11/08/cambodias-garment-manufacturing-industry.html>
- ASEAN Consultative Committee on Standards & Quality. (2016). Guidelines for the Development of Mutual Recognition Arrangements. Retrieved from <http://asean.org/storage/2012/05/Guidelines-for-the-Development-of-Mutual-Recognition-Arrangements.pdf>
- ASEAN Investment Report (2016). Foreign Direct Investment and MSME Linkages. Retrieved from <http://asean.org/storage/2016/09/ASEAN-Investment-Report-2016.pdf>
- ASEAN-Japan Centre. (2017). Global Value Chains in ASEAN: A regional perspective. Retrieved from https://www.asean.or.jp/ja/wp-content/uploads/sites/2/2017/08/GVC-in-ASEAN_paper-1_-A-Regional-Perspective.pdf
- ASEAN. (2017). Investing in ASEAN. Retrieved from <http://asean.org/storage/2017/01/Investing-in-ASEAN-2017-.pdf>
- Aung, S. (2018). Global Agricultural Information Network (GAIN) Report - Myanmar (Issue brief) (R. Nelson, Approver). USDA.
- Better Work. (2018). Our work. Retrieved from <https://betterwork.org/our-work/our-approach/>
- Board of Investment (BOI). (2017). Thailand: Textile Industry. Retrieved from http://www.thinkasiainvestthailand.com/boicontent/webinvopp/brochure_34.pdf
- Burris, J. E. (2015). A Forecast of Global Textile and Apparel Market Shifts In Importing and Exporting – Is this the Final Death Rattle of Domestic Apparel and Textile Manufacturing Industries? *Journal of Textile and Apparel Technology and Management*, 9(2), 1-8.

BIBLIOGRAPHY

- Business Innovation Facility. (2016). BIF Burma (Myanmar): Garments Market Analysis and Strategy. Retrieved from <http://www.bifprogramme.org>
- Cadot, O., & Ing, L. Y. (2017). How Restrictive Are ASEAN's Rules of Origins? *Asian Economic Papers*, 15(3), 115-134.
- CEIC Data. (2017). Brunei GDP: Industry: Manufacture of Wearing Apparel & Textiles. Retrieved from <https://www.ceicdata.com>
- Chang, J.H., Rynhart, G. & Huynh, P. (2016). ASEAN in transformation: Textiles, clothing and footwear: Refashioning the future. Retrieved from http://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---act_emp/documents/publication/wcms_579560.pdf
- Chow, M. E., & Slade, M. V. (2016). Food Security and Trade: Can ASEAN Show the WTO a Way Forward? (Issue brief). National University of Singapore.
- Clean clothes campaign. (2015). Facts on Thailand's Garment Industry. Retrieved from <https://cleanclothes.org/resources/publications/factsheets/thailand-factsheet-2-2015.pdf>.
- Council for the Development of Cambodia. (2012, March 15). Law on the management of quality and safety of products and services. Retrieved from http://www.cambodiainvestment.gov.kh/law-on-the-management-of-quality-and-safety-of-products-and-services_000626.html
- Country Analysis Report: Lao PDR (Rep.). (2015). UNDP.
- Devadason, E. S. (2016, September 10). [Editorial]. More Harmony Needed in ASEAN Food Standards. Retrieved from <http://www.eastasiaforum.org/2016/09/10/more-harmony-needed-in-asean-food-standards/>
- Dinh, H. (2013). Light Manufacturing in Vietnam Creating Jobs and Prosperity in a Middle-Income Economy (Rep.). The World Bank.
- Dardak, R.A. (2018). Impacts of National Agrofood Policy Policy towards Agriculture Sector in Malaysia. Retrieved from http://ap.fttc.agnet.org/ap_db.php?id=853&print=1.
- Devadason, E. S. (2016, September 10). [Editorial]. More Harmony Needed in ASEAN Food Standards. Retrieved from <http://www.eastasiaforum.org/2016/09/10/more-harmony-needed-in-asean-food-standards/>
- Department of Budget and Management. (DBM). (2015). Philippine Textile Research Institute. Retrieved from <https://www.dbm.gov.ph>
- Department of Standards Malaysia (Standards Malaysia). Standards. Retrieved from <https://www.jsm.gov.my/standards#.W1frTdlzaUk>
- Diao, X, & Somwaru, A. (2002). A Global Perspective of Liberalizing World Textile and Apparel Trade, *Nordic Journal of Political Economy*, 28(2), 127-146.
- East Asia Forum. (2016, June 3). Tough times in the Laos garment industry. Retrieved from <http://www.eastasiaforum.org/2016/06/03/tough-times-in-the-laos-garment-industry/>
- EIBN. (2014). Textile and Footwear. Retrieved from <http://indonesien.ahk.de>
- EMM Network. (2018). Source ASEAN Full Service Alliance (SAFSA). Retrieved from <https://www.sgs.com/en/consumer-goods-retail/softlines-and-accessories/bags-and-accessories/audits/source-asean-full-service-alliance-safsa>
- Enlightenment Economics. (2008). The global textile and garments industry: the role of information and communication technologies (ICTs) in exploiting the value chain. Retrieved from http://www.infodev.org/sites/default/files/resource/InfodevDocuments_582.pdf
- EU-ASEAN Forum on Food Safety (2016). ASEAN Food Safety Developments Continued Harmonization Efforts (Working paper).
- Euler Hermes Economic Research. (2018). Global Sector Report: Textile. Retrieved from <http://www.eulerhermes.com/economic-research/blog/EconomicPublications/textile-global-sector-report-feb18.pdf>
- Europa. (2013). Sustainability of textiles. Retrieved from http://ec.europa.eu/environment/industry/retail/pdf/issue_paper_textiles.pdf

BIBLIOGRAPHY

- Europa. (2014). Workers' conditions in the textile and clothing sector: just an Asian affair? Retrieved from <http://www.europarl.europa.eu/EPRS/140841REV1-Workers-conditions-in-the-textile-and-clothing-sector-just-an-Asian-affair-FINAL.pdf>
- Esho, H. (2015). Dynamics of the textiles and apparel industries in Southeast Asia – a preliminary analysis, *Journal of International Economic Studies*, 29, 85-106.
- Famous Textile SDN BHD. (2018). About us. Retrieved from <http://www.famous-textile.com/>
- Fashion Revolution. (2018). Fashion Revolution Cambodia. Retrieved from <https://www.fashionrevolution.org/asia/cambodia/>
- Fernandez-Stark, Frederick, & Gereffi. (2011). The Apparel Global Value Chain: Economic upgrading and workforce development. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.233.1379&rep=rep1&type=pdf>
- Fibre2Fashion. (2014, July 14). Brunei Initiates training program to boost garment sector. Retrieved from <http://www.fibre2fashion.com>.
- Friedman, A. (2017, November 2). Myanmar's garment industry is on a growth path. Retrieved from <https://sourcingjournal.com/topics/trade/myanmars-garment-industry-growth-path-74173/>
- Global Business Guide Indonesia. (2014). Manufacturing: Indonesia's textile and clothing industry. Retrieved from http://www.gbgingonesia.com/en/manufacturing/article/2014/indonesia_s_textile_and_clothing_industry.php
- GlobalEdge. (2018). Apparel and Textiles. Retrieved from <https://globaledge.msu.edu/industries/apparel-and-textiles>
- GlobalEdge. (2018). Apparel and Textiles: Background. Retrieved from <https://globaledge.msu.edu/industries/apparel-and-textiles/background>
- Grant Thornton. (2016). Doing business in Vietnam 2016. Retrieved from <https://www.grantthornton.com.vn/globalassets/1.-member-firms/vietnam/media/doing-business-in-vietnam-2016.pdf>
- Global Value Chains in ASEAN: A Regional Perspective (Rep.). (2017). ASEAN-Japan Centre
- Hamid, M. F. S., & Aslam, M. (2017). Intra-regional Trade Effects of ASEAN Free Trade Area in the Textile and Clothing Industry, *Journal of Economic Integration*, 32(3), 660-688.
- Hong Kong Trade Development Council. (HKTDC). (2018, February 12). Import/Export Procedures of Brunei. Retrieved from <http://emerging-markets-research.hktdc.com/business-news/article/ASEAN/Import-Export-Procedures-of-Brunei/asean/en/1/1X000000/1X0AD20U.htm>
- Hong Kong Trade Development Council. (HKTDC). (2017, July 12). Import/Export Procedures of Cambodia. Retrieved from <http://emerging-markets-research.hktdc.com/business-news/article/ASEAN/Import-Export-Procedures-of-Cambodia/asean/en/1/1X000000/1X0AARXU.htm>
- Hong Kong Trade Development Council. (HKTDC). (2018, January 9). Import/Export Procedures of Indonesia. Retrieved from <http://emerging-markets-research.hktdc.com/business-news/article/ASEAN/Import-Export-Procedures-of-Indonesia/asean/en/1/1X000000/1X0AC0Z1.htm>
- Hong Kong Trade Development Council. (HKTDC). (2018, June 12). Laos: Market Profile. Retrieved from <http://china-trade-research.hktdc.com/business-news/article/One-Belt-One-Road/Laos-Market-Profile/obor/en/1/1X4W6LCX/1X0A3NCR.htm>
- Hong Kong Trade Development Council. (HKTDC). (2017, July 24). Import/Export Procedures of Malaysia. Retrieved from <http://emerging-markets-research.hktdc.com/business-news/article/ASEAN/Import-Export-Procedures-of-Malaysia/asean/en/1/1X4W6LIR/1X0AAXGT.htm>

BIBLIOGRAPHY

- Hong Kong Trade Development Council. (HKTDC). (2017, July 14). Import/Export Procedures of Singapore. Retrieved from <http://emerging-markets-research.hktdc.com/business-news/article/ASEAN/Import-Export-Procedures-ofSingapore/asean/en/1/1X4W6LIR/1X0AASI6.htm>
- Hong Kong Trade Development Council. (HKTDC). (2017, September 27). Import/Export Procedures of Thailand. Retrieved from <http://emerging-markets-research.hktdc.com/business-news/article/ASEAN/Import-Export-Procedures-of-Thailand/asean/en/1/1X4W6LIR/1X0ABLVE.htm>
- Hong Kong Trade Development Council. (HKTDC). (2017, June 9). Import/Export Procedures of Vietnam. Retrieved from <http://emerging-markets-research.hktdc.com/business-news/article/ASEAN/Import-Export-Procedures-of-Vietnam/asean/en/1/1X4W6LIR/1X0AAC6U.htm>
- Hong Kong Trade Development Council. (HKTDC). (2016, June 22). Myanmar rising: The garment sector takes off. Retrieved from <http://economists-pick-research.hktdc.com/business-news/article/Research-Articles/Myanmar-Rising-The-Garment-Sector-TakesOff/rp/en/1/1X000000/1X0A6IQS.htm>
- Hong Kong Trade Development Council. (HKTDC). (2018, June 12). The Philippines: Market Profile. Retrieved from <http://emerging-markets-research.hktdc.com/business-news/article/Asia/The-Philippines-Market-Profile/mp/en/1/1X4W6LCX/1X0604RX.htm>
- Hussain, D., Figueiredo, M., Tereso, A., & Ferreira, F. (2014). Competitiveness in the Textile and Clothing Supply Chain. Retrieved from https://www.researchgate.net/publication/267846126_Competitiveness_in_the_Textile_and_Clothing_Supply_Chain
- Huynh, P. (2016). Employment and wages in Myanmar's nascent garment sector. Retrieved from https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms_535188.pdf
- IIED. (2012). Pro-poor certification: Assessing the benefits of sustainability certification for small-scale farmers in Asia. Retrieved from <http://pubs.iied.org/pdfs/14604IIED.pdf>
- Integrating SMEs into Global Value Chains: Policy Principles and Best Practices (Rep.). (2014). OECD.
- International Development Association Project Appraisal Document - Lao People's Democratic Republic for an Agriculture Competitiveness Project (Rep.). (2018). The World Bank.
- Indonesia Investments. (2016, June 6). Textile Industry Indonesia. Retrieved from <https://www.indonesia-investments.com/business/industries-sectors/textile/item6896?>
- Indonesia National Single Window. (INSW). (2018). Customers EDI. Retrieved from <http://www.insw.go.id/index.php/home/menu/pde-kepabeanan>
- International Finance Corporation (IFC). (2017). IFC's Engagement in Indonesia's Apparel Sector. Retrieved from <https://www.ifc.org/wps/wcm/connect/15a7b748-01cd-42b8-8d01-10602ef52530/Indonesia-trifold-02.pdf?MOD=AJPERES>
- International Finance Corporation (IFC). (2017). IFC's Engagement in Vietnam's Apparel Sector. Retrieved from <https://www.ifc.org/wps/wcm/connect/f27655d9-5bfb-4667-b231-9e91db0e0185/Brochure.Vietnam-03.pdf?MOD=AJPERES>
- International Labour Organisation. (ILO). (2016). ASEAN in transformation: How technology is changing jobs and enterprises. Retrieved from http://www.ilo.org/wcmsp5/groups/public/@ed_dialogue/@act_emp/documents/publication/wcms_579564.pdf
- International Labour Organisation. (ILO). (2017). From obligation to opportunity: A market systems analysis of working conditions in Asia's garment export industry. Retrieved from https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/meetingdocument/wcms_579468.pdf

BIBLIOGRAPHY

- International Labour Organisation. (ILO). (2017). What explains strong export and weak employment figures in the Cambodian garment sector? Retrieved from <https://www.ilo.org>
- International Labour Organisation. (ILO). (2016). Trends in Cambodian garment and footwear prices and their implications for wages and working conditions. Retrieved from <https://www.ilo.org>
- International Labour Organisation. (ILO). (2016). Wages and productivity in the garment sector in Asia and the Pacific and the Arab States. Retrieved from <https://www.ilo.org>
- International Trade Administration (ITA). (2016). Philippines. Retrieved from <https://2016.trade.gov/td/standards/Markets/East%20Asia%20Pacific/Philippines/Philippines.pdf>
- International Trade Administration (ITA). (2018). Singapore – Labeling/Marking Requirements. Retrieved from <https://www.export.gov/article?id=Singapore-Labeling-Marking-Requirements>
- International Trade Administration (ITA). (2016). Technical Textiles Top Markets Report Country Case Study. Retrieved from https://www.trade.gov/topmarkets/pdf/Textiles_Singapore.pdf
- International Trade Administration (ITA). (2017). Thailand – Cotton. Retrieved from <https://www.export.gov/article?id=Thailand-cotton>
- International Trade Administration (ITA). (2016). Vietnam – 2016 Top Markets Report Technical Textiles Country Case Study. Retrieved from https://www.trade.gov/topmarkets/pdf/Textiles_Vietnam.pdf
- Invest ASEAN. (2018). Textile and Apparels. Retrieved from <http://investasean.asean.org/index.php/page/view/textiles-and-apparels>
- Ipsos Business Consulting, available at <https://www.slideshare.net/Ipsosbc/overview-of-vietnam-healthcare-and-medical-device-market>
- Irun, B. (2017). Business opportunities and challenges in the textile and apparel market in China. Retrieved from http://ccilc.pt/wp-content/uploads/2017/07/eu_sme_centre_report_tamarket_in_china_2017.pdf
- ISO. (2018). TISI: Thailand. Retrieved from <https://www.iso.org/member/2139.html>
- ITASEAN. (2017). Vietnam expects growth of textile-garment exports without TPP. Retrieved from <http://www.itasean.org/en/vietnam-expects-growth-of-textile-garment-exports-without-tpp-2/>
- ITMA. (2015). Technologies powering textile innovation. Retrieved from https://www.itma.com/docs/default-source/downloads/nwtt-brochure/itma_nwtt_bro.pdf?sfvrsn=2
- Ksiezak, P. (2016). The CSR Challenges in the Clothing Industry, *Journal of Corporate Responsibility and Leadership*, 3(2), 51-66.
- Lee, K. L., Udin, Z. M., & Hassan, M. G. (2014). Global Supply Chain Capabilities in Malaysian Textile and Apparel Industry, *International Journal of Supply Chain Management*, 3(2), 2051-3771.
- Lopez-Acevedo, G. & Robertson, R. (2016, October 5). Apparel in South Asia based on the “Stitches to Riches” report. Retrieved from <http://documents.worldbank.org/curated/en/733041475749696084/pdf/108829-WP-P146865-Apparel-PUBLIC.pdf>
- Lu, S. (2017, December 18). 5 key trends in world textile and apparel trade. Retrieved from <https://www.researchgate.net/publication/321883634>
- Malaysian Knitting Manufacturers Association. (2013). The Malaysian Textiles and Apparel Industry. Retrieved from <http://www.mkma.org/Notice%20Board/2014/MsiaTC2013.pdf>
- McKinsey & Company. (2016). The State of Fashion 2017. Retrieved from <https://www.mckinsey.com>

BIBLIOGRAPHY

- Mahbubah, N. A. & Muid, A. (2016). Opportunities and challenges in effecting ASEAN economic community: lesson learned from the Indonesian textile and apparel industry. Retrieved from <https://editorialexpress.com>
- Malaysian Investment Development Authority (MIDA). (2018). Textiles and Textile Products. Retrieved from <http://www.mida.gov.my/home/textiles-and-textile-products/posts/>
- Ministry of International Trade and Industry. (2017, August 8). Textiles, apparel and footwear industry profile. Retrieved from http://www.miti.gov.my/miti/resources/4._Textile_Apparel_and_Footwear_Industry_.pdf
- Mulder, P. (2016). Porter Diamond Model. Retrieved from <https://www.toolshero.com/strategy/porter-diamond-model/#>
- Napompech, K. (2014). Factors driving consumers to purchase clothes through e-commerce in social networks, *Journal of applied sciences*, 14(17), 1936-1943.
- National Food Safety Policy. (2009). Ministry of Health of the Lao People's Democratic Republic.
- National Trade Portal Myanmar. (2016). Guide to importing goods into Myanmar. Retrieved from <https://www.myanmartradeportal.gov.mm>
- Ngammongkolrat, A. (2013). Food Industry in Thailand "Kitchen of the world" (Rep.). National Food Institute.
- Nike, Inc. (2018). Nike Manufacturing Map. Retrieved from <http://manufacturingmap.nikeinc.com/>
- Nimlaor, C., Trimetsoontorn, J., & Fongsuwan, W. (2015). AEC Garment Industry Competitiveness: A Structural Equation Model of Thailand's Role, *Research Journal of Business Management*, 9(1), 25-46.
- Nolintha, V. & Jajri, I. (2015). The garment industry in Laos: Technological capabilities, global production chains and competitiveness. Retrieved from <http://www.eria.org/ERIA-DP-2015-13.pdf>
- Nor, N., Bhuiyan, A., Said, J., & Alam, S. (2016). Innovation barriers and risks for food processing SMEs in Malaysia: A logistic regression analysis. *Malaysian Journal of Society and Space*.
- Nyein, Z. (2016). Foreign investors wait at the doors for special textiles zone. Retrieved from <https://www.mmbiztoday.com/articles/foreign-investors-wait-doors-special-textiles-zone>
- OECD-FAO Agricultural Outlook 2017-2026: Southeast Asia: Prospects and challenges (Rep.). (2017). OECD/FAO.
- Ong, J. C. (2012). The tangled state of the Philippine garments industry. Retrieved from <http://www.sgv.ph/the-tangled-state-of-the-philippine-garments-industry-by-john-c-ong-october-1-2012/>
- Organisation for Economic Co-operation OECD-FAO Agricultural Outlook 2017-2026: Southeast Asia: Prospects and challenges (Rep.). (2017). OECD/FAO.
- Organisation for Economic Co-operation and Development. (OECD). (2013). Aid for Trade and Value Chains in Textiles and Apparel. Retrieved from https://www.oecd.org/dac/aft/AidforTrade_SectorStudy_Textiles.pdf
- Organisation for Economic Co-operation and Development. (OECD). (2016). Making Global Value Chains work for ASEAN. Retrieved from <https://www.oecd.org/tad/policynotes/making-gvcs-work-asean.pdf>
- Pettman, S. (2013). Standards Harmonisation in ASEAN: Progress, Challenges and Moving Beyond 2015 (Rep.). Economic Research Institute for ASEAN and East Asia.
- Pham, T. M., & Petlock, B. (2017). Food and Agricultural Import Regulations and Standards – Vietnam
- Preechajarn, S., & Sirikeratikul, S. (2018). Food and Agricultural Import Regulations and Standards - Thailand (Issue brief) (P. Welcher, Approver). USDA.

BIBLIOGRAPHY

- Project Appraisal Document on a Proposed Loan in the Amount of US\$99.31 Million to the Republic of the Philippines for Inclusive Partnerships for Agricultural Competitiveness Project (Rep.). (2018, May 18).
- PT. Pan Brothers Tbk. (2017). Company Profile. Retrieved from <https://www.panbrotherstbk.com>
- Punekar, S. & Gopal, R. (2016). A Study to Identify Customer's Online Apparel Shopping Behavior in Relation to Return Policies of E-Commerce Businesses, *International Journal of Sales & Marketing, Management Research and Development*, 6(3), 1-6.
- PWC. (2016). Doing Business in Vietnam. Retrieved from <https://www.pwc.com/vn/en/publications/2016/pwc-vietnam-doing-business-guide-2016.pdf>
- Research and Markets. (2016). Cambodia Garment Manufacturing Industry Overview, 2011-2020. Retrieved from https://www.researchandmarkets.com/research/bdgzfw/cambodia_garment
- Robertson Jr., P. S. (2007). The Fair Wear Foundation Background Study on Laos: Basic Information on Labour Conditions and Social Auditing in the Lao Garment Industry. *Fair Wear Foundation*. Retrieved from https://www3.fairwear.org/ul/cms/fck-uploaded/documents/country_studies/othercountries/Laos/countrystudylaos2007.pdf
- Samson, J. G., Raitzer, D. A., & Wong, L. C. (2015). Myanmar's Agriculture Sector: Unlocking the Potential for Inclusive Growth (Rep.). ADB.
- Sanad, R. A. (2016). Consumer Attitude and Purchase Decision towards Textiles and Apparel Products, *World Journal of Textile Engineering and Technology*, 2, 16-30.
- SGS. (2018). Source ASEAN Full Service Alliance (SAFSA). Retrieved from <https://www.sgs.com/en/consumer-goods-retail/softlines-and-accessories/bags-and-accessories/audits/source-asean-full-service-alliance-safsa>
- Sugita, I. S. (2017). Food and Agricultural Import Regulations and Standards - Singapore (Issue brief) (J. Dong, Approver). USDA.
- Shen, B., Li, Q., Dong, C., & Perry, P. (2017). Sustainability issues in textile and apparel supply chains. Retrieved from www.mdpi.com/2071-1050/9/9/1592/pdf
- Siy, G, Carrillo, R & Congep. (2007, April 10). ASEAN Textile and Garment Industry Outlook. Retrieved from https://pdf.usaid.gov/pdf_docs/Pnadj684.pdf
- Statista. (2018). Fashion Statista Market Forecast. Retrieved from <https://www.statista.com/outlook/244/124/fashion/singapore#>
- Statista. (2018). Value of the leading 10 textile exporters worldwide 2016, by country. Retrieved from <https://www.statista.com/statistics/236397/value-of-the-leading-global-textile-exporters-by-country/>
- Stotz, L & Kane, G. (2015). Global Garment Industry Factsheet. Retrieved from <https://cleanclothes.org/resources/publications/factsheets/general-factsheet-garment-industry-february-2015.pdf>
- Sudrajat, A. (2016, August 30). Textile Industry: Indonesia aims to become global export leader. Indonesian Textile Association. Retrieved from <https://www.indonesia-investments.com>
- Switch Asia Programme. (2017). Sustainable development of Asia's textile and garment industry. Retrieved from <http://www.eco-business.com/research>
- Technical Barriers to Trade. (2003). United Nations/World Trade Organisation.
- Textile Excellence. (2017, April 26). Philippine apparel exports up 270 % in Jan 2017. Retrieved from <http://www.textileexcellence.com>
- Textile World Asia. (2013, March 4). The Philippines: Textile and apparel industry on the mend. Retrieved from <http://textileworldasia.com>
- Thai Industrial Standards Institute (TISI). (2018). About TISI. Retrieved from <https://www.tisi.go.th/tisiinbrief>

BIBLIOGRAPHY

- Thang, T., & Linh, D. (2015). Vietnam's Policies on Agricultural Restructuring (Rep.). Institute of Policy and Strategy for Agriculture and Rural Development.
- Thanh, V. (2015). Global Agricultural Information Network (GAIN) Report - Cambodia (Issue brief) (G. Smith, Approver). USDA.
- The Agro-ecology Initiatives in Lao PDR (Rep.). (2018). Cooperation International for Research on Agriculture and Development.
- The Council on Foreign Relations (CFR). (2018). ASEAN: The Association of Southeast Asian Nations. Retrieved from <https://www.cfr.org/backgrounder/asean-association-southeast-asian-nations>
- The Economic Impact of the Food Industry in Singapore (Rep.). (2016). Oxford Economics.
- Transforming Vietnamese Agriculture: Gaining More from Less (Rep.). (2016). The World Bank.
- The Economist Intelligence Unit (EIU). (2016). Clothing the world. Retrieved from <http://www.eiu.com/industry/article/1223914506/clothing-the-world/2016-02-03>
- Tot, B. V. (2014). Textile & Apparel Industry Report. Retrieved from <http://fpts.com.vn>.
- United States Department of Agriculture. (USDA). (2017). Cotton and Products Annual 2017. Retrieved from https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Cotton%20and%20Products%20Annual_Kuala%20Lumpur_Malaysia_4-18-2017.pdf
- Unlocking the Opportunities for Crop Science Products in CLMV (Rep.). (2017). Ipsos Business Consulting.
- Vu, H. T. & Pham, L. C. (2016). A dynamic approach to assess international competitiveness of Vietnam's garment and textile industry, *SpringerPlus* 5(203), 1-13.
- Wahab, A. (2017). Global Agricultural Information Network (GAIN) Report - Malaysia (Issue brief) (J. Dong, Approver). USDA.
- Wang, T. Y., Chien, S. C., & Yin, S. (2004). National Competitiveness of Myanmar – A view from] resource-based strategies, *Asia Pacific Management Review*, 9(2), 263-283.
- Watchravesringkan, K., Karpova, E., Hodges, N. N., & Copeland, R. (2010). The competitive position of Thailand's apparel industry: Challenges and opportunities for globalization, *Journal of Fashion Marketing and Management*, 14(4), 576-597.
- Why young professionals are taking up farming in Thailand. Retrieved from <https://www.csmonitor.com/World/Asia-Pacific/2018/0702/Why-young-professionals-are-taking-up-farming-in-Thailand>.
- William, E. J. (2008). Asian Textile and Apparel Trade: Moving Forward with Regional Integration, *Asian Development Bank, Economics and research department Working Paper No. 111*.
- World Bank. (2016). World Textiles and Clothing exports and imports By Country and Region 2016. Retrieved from <https://wits.worldbank.org>
- World Bank Group. (2012). Lao PDR: Labour standards and productivity in the garments export sector. Retrieved from <https://www.jobsknowledge.org>
- World Bank Group. (2016, April 28). Apparel manufacturing has potential to create 1.2 million new jobs, says World Bank Report. Retrieved from <http://www.worldbank.org>
- World Economic Forum. (2015). The Human Capital Report 2015. Retrieved from http://www3.weforum.org/docs/WEF_Human_Capital_Report_2015.pdf
- WTO Center. (2012). Laos: The Textile and Garment Industry in the Post-ATC Era. Retrieved from <http://wtocenter.vn/wto/case-studies/laos-textile-and-garment-industry-post-atc-era>
- WTO. (2017). Trade Policy Review. Retrieved from https://www.wto.org/english/tratop_e/tpr_e/s364_sum_e.pdf
- WTO. (2016). World Tariff Profiles 2016. Retrieved from https://www.wto.org/english/res_e/booksp_e/tariff_profiles16_e.pdf
- Yamaguchi, A. (2018). Global Value Chains in ASEAN. Retrieved from https://www.iima.or.jp/Docs/newsletter/2018/NL2018No_1_e.pdf

BIBLIOGRAPHY

Yarns and Fibers. (YNFX). (2016). Demand of Malaysian textile, apparel likely to increase to US\$160bn by 2018. Retrieved from <http://www.yarnsandfibers.com>