3. Characteristics of automotive value chains

The automotive value chain can be characterized as an automaker-driven network. This is because, common to many capital and technology intensive industries, automobile production systems are, to a great extent, controlled by the automakers (ESCAP, 2009). The automakers also own car brands whose value is maintained by massive investment in sales and marketing, after-sales services and quality assurance. The value chain consists of a complex mixture of firms of different sizes, types and geographic scope, producing an enormous variety of products from simple parts to technologically complex systems.[vii] Thus, the present automotive value chain has evolved into a complex, multi-tiered supplier structure with a high degree of outsourcing (Dicken, 2007). Automotive value chains specifically comprise the following players: standardizers, material suppliers, component specialists, integrators, assemblers and distributors (FPRI, 2012; Veloso and Kumar, 2002).

Standardizers, who are often automakers, conduct marketing research, develop the vehicle concept and design the specifications of the vehicle including its key modules and systems, heavily investing in research and development and process engineering. A first-tier supplier could be a standardizer by cooperating with the automakers in designing components and modules. Thailand has been the location of choice to date for standardizers, and R&D centres have been established by automakers in Thailand for the design of engines and localization of specifications. This is mainly due to the growing importance of the Thai market and Thailand's role as a regional production hub, where a localized R&D function is necessary to comply with local needs and trends, such as the green car policy, enacted in Thailand and other countries in the region. Standardizers have not as yet been established in other countries in the subregion.

Material suppliers provide various raw materials to automakers and their suppliers for parts and components production. Those materials include steels and metals, textiles, glasses, plastics, rubbers and chemicals. From the data currently available from the author's interviews with automakers and suppliers in the subregion, materials for automotive parts and components production are mainly sourced from Thailand (both Thai and foreign nationals) and supplemented by imports from other ASEAN countries, in particular Indonesia and Malaysia, and in some cases Australia, China, Europe, India, Japan, the Republic of Korea and North America. The automotive industry in the subregion still has to rely on imported materials from countries where advanced production technology and know-how are available.

Components specialists manufacture, according to the specification and requirement given by the standardizers, and deliver the required goods to integrators or assemblers for the purpose of module and system production or the final assembly of vehicles. The components specialists can be further categorized as either first-tier suppliers that deliver components directly to the assemblers and lower-tier suppliers that provide components to other suppliers or integrators. The lower-tier suppliers — most of them are smaller enterprises — tend to manufacture simpler and more labour-intensive

parts that would later be incorporated by the higher tier suppliers (cf. Veloso and Kumar, 2002). Thailand and Viet Nam are two primary locations for component specialists. Thailand has established its automotive parts sector with over 1,800 suppliers with growing involvement by local firms. Viet Nam has also established an automotive parts sector on a smaller scale with 200 suppliers, and it is more heavily reliant on imported parts than that of Thailand. Localization for Thai auto production now exceeds 90 per cent, while in Viet Nam it accounts for approximately ten per cent (Yamamoto, 2012). The presence of component specialists in other countries in the Mekong subregion apart is, at the moment, not yet widely established but some Japanese and other first- and second-tier suppliers have recently expanded into Cambodia, Lao People's Democratic Republic and Myanmar (JETRO, 2012).

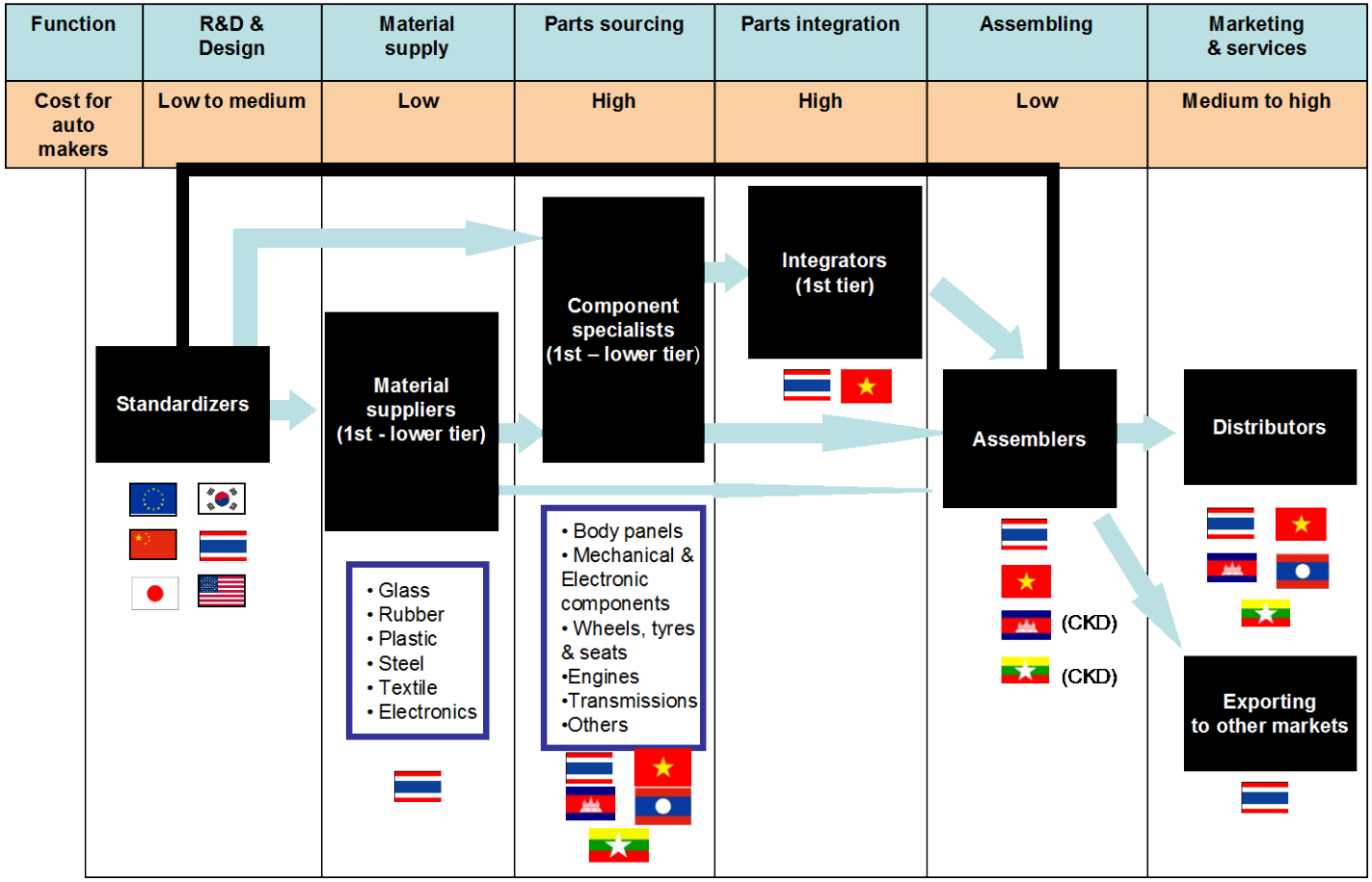
Integrators design and assemble key modules and systems for final assembly and are typically first-tier suppliers. Examples include integrating key elements into an engine and an air conditioning system. As the integrators must deal with a number of lower-tier suppliers, they must possess high degree of supply chain management skill, while adequately investing in R&D and process engineering. Today, Thailand and Viet Nam are the primary locations for the integrators in the subregion. No integrator has yet to move to Cambodia, Lao People's Democratic Republic or Myanmar.

Assemblers, which are typically automakers (and for some exceptional cases first-tier suppliers), assemble vehicles in locations near their main markets or offer adequate access to factor endowment. Thailand is the leading location in terms of volume and variety of car assembly, including a large share for export. Since the 1990s, assemblers have also been also present in Viet Nam but on a much smaller scale, solely for the domestic market. Cambodia is now receiving increasing, if still modest, attention from assemblers, starting complete knock-down (CKD) assembly in the mid 2000s. Myanmar has recently developed auto assembly lines on a small scale and still imports used cars as a main source of automobile supply. Lao People's Democratic Republic has yet to attract any assembly line and is a net importer of vehicles.

Distributors supply vehicles to consumers in the local market, conducting various sales and marketing activities and providing after-sales services. As there is growing automobile demand in all countries in the subregion, a need for dealership and repair services has rapidly arisen. Dealership networks have been set up by major automakers in all countries except Myanmar where dealership development is underway.

Figure 6 illustrates the simplified relationships among the key players within the global automotive value chains. It also indicates specific national presence among the value chain players in the Mekong subregion.

Figure 6: A simplified global automotive value chain



Source: The author's compliance.
Note: Both inbound and outbound logistics costs are included in each function.

Regarding the cost structure of the automotive value chain, the purchasing and production of parts, components and modules represent the largest cost area (see figure 6), accounting for between 40 and 70 per cent of the price of an average car (ABN-AMRO, 2000; Holweg, Davies and Podpolny, 2009). The second and third largest cost areas are sales and marketing as well as research and development,[viii] accounting for roughly 20 per cent and nearly 10 per cent of the car price, respectively. The costs for assembling and materials are both modest, each accounting for less than 10 per cent of the car price (cf. Holweg, Davies and Podpolny, 2009). Since supplies such as parts, components and modules account for the largest cost group, one key strategy adopted by the automakers to improve competitiveness has been effective supply chain management in order to reduce costs, and this has led to the expansion of automotive value chains to low-cost neighbouring countries.

Key findings from three industrial surveys

This section reviews the results of three most recent industrial surveys conducted in the Mekong subregion. The Japan External Trade Organization (JETRO) conducted the first and second surveys in 2009 and 2012, respectively. The third survey was conducted by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) and the Fiscal Policy Research Institute (FPRI) of Thailand in 2012. The first survey interviewed 103 Japanese investors and local enterprises mainly in manufacturing sectors, which operate in the Mekong subregion, to identify corporate strategies and challenges in their cross-border operations (JETRO, 2009). The second survey was conducted with 240 firms as the follow-up to the first survey and aimed to identify the major changes of corporate strategies and challenges from the 2009 survey, including the quality of infrastructure and related policies and regulations (JETRO, 2012). The third survey conducted by UNESCAP and FPRI looked into the specific strategies and challenges of the automotive industry in the subregion to complement the results of the JETRO surveys; thus, it was undertaken with 22 automotive-related agencies in the subregion, including automakers and automotive parts suppliers as well as automotive associations and institutes (FPRI, 2012). All three surveys adopted the semi-structured interview method but some informants participated in the surveys through telephone interviews and questionnaires.

The major findings from the three surveys are summarized as follows:

- The majority of surveyed firms have expanded or have a strong intention to expand their automotive value chains within the Mekong subregion, including less developed countries such as Cambodia, Lao People's Democratic Republic and Myanmar, for example, through investment in new factories and upgrading of existing facilities.

- The motives for expansion of cross-border operations in the subregion are in line with the three major motives for automotive investment (see figure 4): (1) to seek a greater access to market; (2) to secure key factor inputs such as labour;

and (3) to reduce operational costs through pro-business policy framework in the host country.

- The automotive industry has tried to reap benefit from various free trade agreements such as AFTA and ASEAN+6, sourcing parts and components from other ASEAN countries and ASEAN+6 partners. Different processes in automotive production can be shifted from one country to the other. For example, a firm in Thailand brings materials to Cambodia to be processed in a factory in the country and transports those processed products back to Thailand to finish the process.

- Due to the implementation of the Cross-Border Transport Facilitation Agreement (CBTA), the movement of goods within the subregion has been significantly smoothened. For example, transhipment between Thailand and Lao People's Democratic Republic became unnecessary, resulting in the reduction of time and the risk of damage. Customs procedures were also improved significantly, officially introducing e-customs and fast-track systems.

While their results strongly suggest major improvements in the cross-border business environment, the three industrial surveys also highlight a number of obstacles to the growth of automotive production linkages within the Mekong subregion. Those obstacles can be categorized into six groups: (1) trade liberalization; (2) trade facilitation and logistics; (3) infrastructure; (4) policy and regulatory framework; (5) labour market; and (6) business strategies. Those six groups are summarized in table 4.

Table 4: Obstacles to the development of global automotive value chains in the Mekong subregion

Category	Details
Trade liberalization	• Different and stringent rules of origin across various free trade agreements (e.g. ASEAN-India FTA) • Different HS classifications among FTAs (even at the 6 digit level) and HS revisions • Difference in classification and understanding of the HS code among customs • Insufficient tariff reduction including those caused by "reciprocity" among FTAs (ATIGA and ASEAN-China) • Lack of information on ongoing FTA implementation and negotiations • Required specific documentations (certificates of origin)
Trade facilitation and logistics	• Insufficient simplification and harmonization in customs clearance systems • Time-consuming trade licensing • Original documents required at customs

	• Unofficial fees at customs • Higher import duties due to misclassification of the HS code and lacking transparent ruling systems • Low utilization of ICT based customs systems, particularly at the provincial level • High logistics costs of cross-border shipments • Lack of single-stop inspection at the borders • Inconvenient operation time of customs • Cumbersome procedures of certificate of origin (e.g. inspection in factories) • Insufficient deregulation of cross-border transportation (i.e. triple license) • Trans-shipment at borders (Myanmar border; Cambodia and Thailand border) due to non-ratification/implementation of CBTA • Increased number of permissions for cargo transportation • Lack of third-party international transport insurance • Inadequate customs and trans-shipment facilities • Inadequate linkage among logistical hubs (connecting routes, seaports and airports)
Infrastructure	• Poor road conditions and limited capacity and access • Instability and shortage of power supply • Insufficient water supply • Lack of railway networks (Bangkok-Phnom Penh-Ho Chi Min City railway) • Lack of adequate deep seaports and airports • Insufficient industrial estates, particularly in the border areas • Underdeveloped communication facilities (e.g. internet access and speed)
Policy and regulatory framework	• Unfavourable investment law and land acts for foreign direct investment • Stringent regulation and cumbersome procedures • Frequently changing legislation and lack of consultation with the private sector • Lack of transparent policy decisions • High registration fees and taxes (e.g. automotive sector in Viet Nam) • Inadequate protection of intellectual property rights (e.g. patents and trademarks) • Weak supporting industry and lack of policies for its development (i.e., poor SME cluster) • Underdeveloped legal system • High cost of foreign currency remittance
Labour markets	• Increasing labour costs (Thailand and Viet Nam) • Shortage of skilled labour (engineers and technicians) • Low labour productivity

	• Low quality of national education system, particularly lack of technical and engineering education (such as secondary vocational education)
Business strategies	• The necessity of proximity between automakers and suppliers for just-in-time delivery • Difficulty with punctual delivery by cross-border shipments • Lack of economies of scale • Lack of technology • Substantial financial outlays

Source: The author's compliance based on JETRO (2009; 2012), FPRI (2012) and the author's interviews with the automotive sector.